



FOURTH EDITION

KEYBOARD

Computer Science with Application Software
FOR GRADE 6

**TEACHING
GUIDE**

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Introduction:

In this ever-evolving world, computers have become an integral part of our daily lives, shaping the way we learn, communicate, and explore the world around us. This teacher's guide is designed to empower educators and engage young learners. It is a valuable tool for teaching computer concepts. Our teacher's guide for Keyboard 6 features:



Resource Pack for Teacher's Support

Equip educators with the tools they need to inspire and guide students effectively.



Sample Lesson Plans

Step-by-step lesson plans to ensure seamless classroom delivery, enhancing student comprehension.



Extended Activities

Dive deeper with enriching activities that encourage exploration and critical thinking.



Digital Content - Videos

Access engaging videos that bring complex concepts to life, making learning interactive and enjoyable.



Digital Content - Additional Assessments

Gauge student understanding with extra assessments, fostering a well-rounded evaluation.



Answer Key

Find clarity with a comprehensive answer key for end-of-chapter questions.



Worksheet Pack

Each chapter includes a diverse range of worksheets to reinforce learning and assess progress.

This guide is a collaborative effort, drawing insights from educational experts and the latest pedagogical approaches. It's an invaluable companion for educators embarking on the journey of nurturing young minds in the realm of computer education.



KWL chart

KNOW	WONDER	LEARNT
<p>Share your knowledge about the following concepts</p> <p>Algorithms</p> <p>Computer programming</p> <p>Scratch programming tool</p> <p>Have you used Scratch before to make any games? If yes, please write about it?</p>	<p>What do you think you should know to get started with programming in Scratch? Mention any 3 things.</p> <p>What do you understand by the following terms?</p> <p>Sequence:</p> <p>Events:</p> <p>Loops:</p> <p>Conditional statement:</p>	<p>Share briefly what you think you can do using Scratch Programming.</p>



Story Sequencing

Feed the Alien some Peanut butter and Jam Sandwich!

Scenario: an alien has landed on Earth and is very hungry. It is tired of abducting humans and wants some peanut butter and jam sandwich. The alien doesn't know how to make the sandwich and needs your help to figure it out. The alien thinks like a computer and will only do exactly what you instruct.

Help the alien in making the peanut butter and jam sandwich. Write down step by step instructions on how to make a peanut butter and jam sandwich.

Formulate a problem statement: _____

1

The Computer System

Lesson plan

This is an overall lesson plan for the entire chapter. Depending on the number of periods, the ideas from this lesson plan can be used to make multiple lessons.

Resources: Laptop, projector, textbook, teaching guide, cutouts of the logos mentioned in the activity.

Pre-requisite: Before starting the explanation, the students should have briefly gone through all the basic concepts in the chapter. At the end of each class, assign the students pre-reading tasks of relevant pages for the next lesson. Utilize the class time in elaborating these concepts further through examples and inquiry.

Introduction:

Begin the lesson by asking students to share their understanding of a Computer. Expected responses could be “Laptop”, “Mobile”, “Tablet” or “a device that makes work easier and faster.” Note these responses on the board. Next, explain to students that computers have evolved both in terms of their size and utility over a period of time. Refer to timeline of computer development on pg 1, Fig 1.1. in the textbook. It would be a good practice to save few pictures of some earlier computers beforehand and display them in class for better understanding of the concepts.

Explanation:

Ask students to read the topic “Classification of Computers” on pg 8 briefly. Once they are done reading, ask them to close their textbooks. Reinforce the concept of “Classification of Computers” by displaying the images of “tablet”, “smartphones”, “eBook reader”, “laptop”, “desktop computer”, “Mainframe computer” on the projector screen. Have students identify and name the classification of each computer. It is recommended to have the images saved in the computer beforehand, to make optimal use of the class time.

Explain the concept of ICT devices to students by referring to the topic “ICT devices and their applications” on pg 10 in the textbook. Engage the students by encouraging them to give examples of ICT devices and their uses. Expected responses could be “Mobile”, “Television”, “Radio”. Expected applications students may highlight are: “Booking a ride”, “Paying bills and making payments”, “Getting latest news”, etc.

Use inquiry method to help students identify common input and output devices they use with computers in their computer lab or at home. Expected responses may include “keyboard”, “mouse”, “USB/Flash drive”, “printer”, “LCD Monitor”, “projector”. While students are naming these devices, ask them whether each is an input device or output device. A sample question you may ask is: “Is a mouse an input device or output device? What is the purpose of the mouse?” extend the discussion by providing detailed explanation of the input and output devices mentioned in the chapter.

Elaborate the concept of Types of memory given on pg 17 in the textbook. Help students understand the concept of RAM and ROM by explaining them that RAM serves a short-term memory, storing data temporarily. For example, when working on a document or playing a game on computer, the data is stored temporarily in RAM. On the other hand, ROM is pre-built memory. Applications that are needed to start the computer are stored in ROM.

Mini-activity (10 minutes)

Provide students with cut-outs of the images of the following logos:

1. MS word logo
2. Windows
3. Linux
4. Android
5. Careem app
6. Chrome
7. Norton Antivirus
8. iOS

Divide your class into groups of 3 or 4. Ask them to draw two columns on chart paper (A4 paper can also be used for the activity) and label the columns as Application and System Software. Ask them to sort the provided images into respective columns.

Ask students to read through the topic SOFTWARE on pg 20 of the textbook . Meanwhile, write the name of common software on the board, such as: Microsoft Word, NORTON, LINUX, Windows 10, etc. Alternatively, you can also show the images of these softwares. Use think-pair-share strategy and ask students to classify the list into application or system software. Once they are done, let the entire class to work together to share their responses.

You can assign any of the following tasks for home-activity.

- Exercises
- In the Lab
- Application Based Questions
- Group Project

Digital content:

Assessments: There is a specialised assessment section of objective questions based on the entire chapter. It can be assigned to students in part after completing specific topics in class or as a whole at the end of the chapter. It can be used for reinforcement of concepts as home task or as marked assessment.

Conclusion:

Divide the class into groups, and write the name of the topics discussed in class on the board, or have them displayed on the projector screen. Next, ask each group to summarise the topic and share their understanding with their peers.

Assessment:

Measure student learning based on Bloom's Taxonomy model as well as use Formative Assessment technique. Formative assessment can be conducted through inquiry at the end of the lesson such as: "name different classifications of the computers", "explain difference between RAM and ROM".



Answer to Exercise



Objective Type Questions

1. Choose the correct answer

a) barcode reader	b) barcode	c) Programs that run on a computer	d) system software and application software	e) helps run and maintain the computer	f) software used to do everyday tasks on the computer
g) word processor	h) MARK I	i) Pascal	j) Very large scale integrated circuit	k) EDSAC	l) Charles Babbage



Descriptive Type Questions

a.

Hardware	Software
The physical components of the computer that we can see and touch	The programs needed to run or operate the computer systems
Examples include: mouse, printer, keyboard, LCD	Examples include: Windows OS, MS word, Linux, Norton Antivirus
Hardware can be classified into: <ul style="list-style-type: none"> • Input • Output • System unit • Communication devices • System storage 	Software can be classified as: <ul style="list-style-type: none"> • System software • Application software

b. Main components of hardware are:

Input: accepts input from the user and converts it into a form understandable by computer, examples include, keyboard, mouse, scanner, etc.

Output: provides information to the user in an understandable format. Examples include, LCD, printer, speaker, etc.

System unit: contains all the interior parts of the computer such as motherboard, CPU, expansion slots, memory, etc.

Communication devices: these enable the computer to send and receive data to or from the user. For example, network devices.

System storage: as the name suggests, these are the devices that store the data. Examples include, HDD, SSD and external storage devices such as USB.

- c. Operating system is a collection of programs that manages and controls the computer and other applications installed in the computer. Examples include: Windows OS, Android.
- d. LCD projector can be used:
 - a. In classroom to show images, video and other information to the entire class.
 - b. In trade-shows or business meetings to display information to larger audiences.
- e. Having all the information can be a huge security threat and can result in identity theft i.e. stealing someone's information and using it in a wrong way. If a user's smart card is compromised, the information can be stolen and can be misused against the user.
- f. The system software helps with the following tasks:
 - a. Helps to manage the computer resources such as CPU and memory.
 - b. Provides an interface to the user to perform tasks seamlessly.
 - c. Helps to manage input and output functions of the computer.
- g. Second generation computers had following features:
 - a. Used transistors
 - b. Smaller, cheaper and faster than first generation computers
 - c. Relied on punch card for inputs
 - d. Contained all the components that we see today in modern-day computers
- h. Limitations of first generation computer:
 - a. High power consumption
 - b. Low operating speed
 - c. Expensive to build
 - d. Limited functionality; could solve one problem at a time
- i. The advances in computer have significantly impacted our lives in the following ways:
 - a. The communication have become much faster. It is easier to reach out to people.
 - b. Processes have become automated, which helps us perform tasks in a matter of few hours.
 - c. With convenient access to information, it is easier to stay aware of things happening around us.
- j. Early calculating devices include:
 - a. Abacus – still used in school to teach kids basic mathematical concepts of place value
 - b. Napier bones – used to perform basic math calculations such as addition, subtraction, multiplication and division. It was used to find square root of a number too. It is used today to study practical

application of mathematics.

- c. Pascaline – it was also used to perform math calculations such as addition, subtraction, multiplication and division. It could perform division of numbers up to hundreds and thousands.

k.

Napier bones	Pascaline
Numbers carved on bones or strips of wood	Rectangle box with movable wheels
Used to perform basic math operations such as addition, subtraction, multiplication and division and find square root of a number.	Could perform addition, subtraction, multiplication and division. Perform division up to hundreds and thousands.

Both the devices were used for calculations and each had their distinguishing features in terms of functionality. However, Pascaline was more advanced in terms of its usability as the device has movable wheels which made it easier to use.

- l. The microprocessors contain all components on a single chip which makes it very cost and performance efficient for the users. The processing speed has become much faster and have larger storage capacities that are cheaper than the earlier ones.
- m. Artificial intelligence can not replace the teachers, however with advancement in technology and AI particularly, the teaching process will be automated than it is today. The need of the teacher would still be important as the AI devices can not have the same level empathy as humans. A teacher better understands the needs and abilities of a student. The AI can only guide the learning process, however a teacher would still be needed to make the learning happen and interesting for students.



Application Based Questions

1.

Hardware	Software
Barcode reader, card reader, USB drive, hard drive, ports, expansion slots, braille printer	Windows 10, antivirus, MS word, editor

2.

- a. Application software: Quick Heal ; System software: Windows 10
- b. Operating system is first loaded when the computer is turned on.

3.

- a. First generation of computers
- b. 1940-1958
- c. Large size, small storage, expensive, processing power was slow.

4.
 - a. Artificial Intelligence means the ability of the computer to simulate human-like intelligence and perform tasks through decision making processes.
 - b. Fifth generation
5.
 - a. Computers are versatile because they can perform more than one type of task at a time and have very high processing speed and power. They are able to perform tasks with huge accuracy.
 - b. Computers are diligent in the sense that they can perform same task over and over again without getting tired or making mistake.



In the Lab

1. Expected responses could be Windows 11, Windows 10, Windows 8, etc. Students should be encouraged to find and identify the software. Other two OS: MacOS and Android.
2. **List of application software:**
 1. MS word: used to create and format documents.
 2. Spotify: used to listen music
 3. Google chrome: used to surf web
 4. Adobe PDF reader: used to open files in PDF format.
 5. MS Excel: used to perform mathematical calculations and make charts
 6. VLC player: used to open video and audio files
 7. Calendar: used to view calendar and set reminders
 8. Adobe Photoshop: used to edit photos
 9. Moviemaker: used to edit videos
 10. Weather app: used to view weather updates
- List of utility programs:**
 1. Windows Defender: used to protect computer from malware
 2. WinRAR: used to zip multiple files and compress them
 3. Disk cleanup: used to clean up disk space to create space
 4. Backup: used to backup files and folders, helps to restore data in case of loss
 5. Disk defragmenter: used to rearrange file and stores them in contiguous location in memory.
3. Allow students to look for pictures of input and output devices on the internet or in magazine.
4. Windows Defender. Other antivirus programs include: Norton antivirus, Quick Heal, McAfee, Avast, Malwarebytes
5. Encourage students to perform this activity.



Group Project

1.
 - a.
 - i. **Optical mark reader:** to read the responses marked by students in the test.
 - ii. **CPU:** to store the scanned document
 - iii. **Monitor:** to view the result
 - iv. **Printer:** to print the results
 - b.
 - i. **Magnetic strip card:** to store the reward points
 - ii. **Smart card reader:** to read the reward points
 - iii. **Application software:** to redeem the points
 - c. To setup a computer system:
 - i. Monitor
 - ii. Keyboard
 - iii. Mouse
 - iv. CPU
 - v. Important application software such as Office suite
 - vi. Utility software such as antivirus

The student responses may vary depending on the number of devices, including both hardware and software.

2

The Operating System

Lesson plan

This is an overall lesson plan for the entire chapter. Depending on the number of periods, the lesson plan can be split into two. It is recommended to organize the class in such a manner that students get some practice time at the end of the class.

Resources: Projector, computer, textbook, teaching guide, folder, papers.

Pre-requisite: Students have a basic understanding of Operating systems from the previous chapter and are able to identify different OS. Sample folders and sub-folders should be created beforehand on each computer with some files stored in them.

Introduction:

Begin the lesson by displaying the image of Windows OS on the projector screen. Ask guiding questions from the students to gauge their understanding and knowledge. For instance ask students: “Do you recognize this image?”, “Can you tell from our previous discussion what this software does?” “Can you name any similar software?” Have the images of some common OS saved in your computer and display them and ask students to name them.

Explanation:

Ask students to silently read through the topic Operating System on pg 27 of the textbook. Once they are finished reading, ask them their understanding of the definition of the operating system. Elaborate different types of OS, used in desktop and mobile. Display the table: “difference between different type of OS” given on pg 28 of the textbook on the projector screen. Explain the key features of each type of OS to students.

Elaborate the concept of CLI and GUI to the students by explaining them the text given on pg 29. Next, display the image figure 2.3 on pg 30 on the projector. Ask students to turn to their computer screens and closely observe the Windows10 desktop screen. Ask them to locate on their desktop screens the different components labelled in the picture and share their responses with their peers. Ask students to read through the description of each label from the textbook (pgs: 31 and 32) while practically exploring them on their desktop screen. Explain the concept of file and folder to students. Relate the concept with the files and folders they use in daily life by explaining that Folders are used to contain more than one File. It is recommended to have a folder and some papers while explaining this concept so that students can relate to it.

Elaborate that each file has a different file extension used to specify it. Explain the concept of icons given on pg 33. Demonstrate the concept by displaying different files (for example, MS word file, MS Paint file, MS excel file). Have students observe how the icon for each file type is different from the other.

Now, explain the concept of sub-folders to the students. Have them observe the folder that they have on their desktop. Ask them to open it and see if they can locate any other folders or files in it. You can ask guiding questions such as: “Do you see any files in this folder?”, “Are there any other folders in this folders?”, “Why do you think we need sub-folders?”

Next, demonstrate how to delete the folder. Ask students to read the paragraph “Deleting a folder given on pg 33” and practise deleting a folder or file. At this point you can ask them guiding questions such as: “What

happens when you delete the sub-folder?”, “Is everything within the folder deleted?”, “What will happen if you delete the main folder?”

Inquire the students about the concept of having shortcuts and why it is important. Expected responses could be: “shortcut makes it easier to locate a file”, “it becomes easy to access a file”. Next demonstrate how to create shortcut and ask students to follow. Demonstrate the steps of copy, cut, paste and renaming the file. While doing this, allow the students to follow.

Students can be assigned end of chapter exercise as homework.

Digital content:

Videos may be assigned either before studying the relevant topic or after the its completion as reinforcement.

List of videos:

1. Operating System

Assessments: There is a specialised assessment section of objective questions based on the entire chapter. It can be assigned to students in part after completing specific topics in class or as a whole at the end of the chapter. It can be used for reinforcement of concepts as home task or as marked assessment.

Conclusion:

Wrap up the lesson by asking students to provide a recap of the concepts. Divide the class in pairs/groups and assign one task to each group/pair. For example, one pair/group can be assigned to demonstrate how to copy files. Give 2-3 minutes to students to revise the concepts if they want from their textbook. Once they are done, allow each group/pair to demonstrate the assigned task to the rest of the class.

Assessment:

Use inquiry to gauge the student understanding of the concepts explained.



Answer to Exercise



Objective Type Questions

1. Choose the correct answer

a) linux iOS	b) system software	c) paste	d) system tray	e) print
f) all of above	g) to provide a location for OS and other software to store and access files	h) all of abovel	i) by using combination of keyboard shortcuts and mouse click ii) by using right-click menu	j) all of the above

Descriptive Type Questions

- a. An operating system is System Software, that manages a computer's resources.
- b. The major functions of an OS are:
 - i. It runs a computer.
 - ii. It manages computer's memory, processes, and hardware and software.
 - iii. It provides an interface to the user to interact with the computer.

c.

Files	Folder
A file is a storage location in a computer or mobile device	A folder stores one or more files
All programs and data are "written" into and "read" through a file	A folder can contain other folders
Each file has a unique icon to distinguish it from others	Folders are represented by a folder icon

- d. There are following ways to cut-copy-paste the files:
 - a. Using a combination of keyboard shortcuts and mouse clicks
 - b. Using right-click and selecting the desired action from the context menu that appears

Application Based Questions

1. Encourage students to perform this activity in class.
2. Examples of functions performed by an OS

Function	Example
Controlling hardware component	When you attach a mouse to your PC, the OS looks for the compatible drivers to enable the mouse to function.
Multitasking facilities	The OS allows you to work on two different tasks, such as working on a MS Word file and browsing internet at the same time.
Managing computer's memory	The OS decides and allocates memory to the tasks you are processing. If you are playing a game on computer, the OS dedicates the memory to the game program so that it runs smoothly. It also keeps track of available memory locations and allocates it to the programs that need it.

Managing CPU	OS finds the program or software that is open and loads it into RAM. CPU then can execute it.
Managing files	It keeps track of all the files along with their names and locations. For instance Windows OS uses Windows Explorer to help you find the files.
Managing users	The OS helps create different user profiles on the same system. It keeps track of all the user profiles and their system login details.



In the Lab

Encourage students to do research on the internet and explore the differences and similarities between Mac and Windows OS. Some useful websites that you can recommend students are:

- i. ByJu's Exam prep (<https://byjus.com/gate/difference-between-windows-and-mac/>)
- ii. Geeks for Geeks (<https://www.geeksforgeeks.org/difference-between-windows-and-macos/>)



Group Project

For this you must encourage students to search for different mobile OS. Some mobile OS, in addition to Android and iOS that students can search for are:

1. Blackberry OS
2. Windows OS
3. Symbian OS.

Lesson plan

This is an overall lesson plan for the entire chapter. Depending on the number of periods, the ideas from this lesson plan can be used to make multiple lessons.

Resources: Projector, computer, textbook, teaching guide, MS Paint, Paint 3D and Adobe Photoshop CS 3, Images saved in the computer.

Pre-requisite: Students are comfortable using the keyboard shortcuts, and searching for programs installed in PC. It is recommended for the teachers to practise the practical steps mentioned in the chapter for different tools prior to starting the lesson.

Before this lesson, students are asked to bring their art samples to the class.

Introduction:

Ask students to have their art samples ready. Engage the students by asking them how they made their artwork. Example question that you may ask is: “What tools did you use?” Example responses can be: “pencil”, “paper”, “colours”, “brushes”, etc.

From here on, tell students that they can also paint digitally on a computer using different software tools such as MS Paint, Paint 3D, Photoshop and Canva. While you are discussing this, make sure you have the logos of these tools displayed either on the class softboard or projector. Ask students if they have used any of these.

Explanation:

Write or display the term “Image processing” on the board or projector screen. Ask students what they understand by it. Expected responses could be: “edit photos”, “colouring pictures”, “filters”, etc. Elaborate the definition of Image processing mentioned in the textbook on pg 39.

Ask students to open Paint 3D on their computers and read through the text MS 3D Paint on pg 42. While they are reading the text, ask them to locate the drawing tools on the user interface of the software as well. Scaffold students where needed by taking a round, while they are reading and working at their computers at the same time. Ask them guiding questions such as: “Are you able to see the brush tool?”, “What does 3D tool do?” Demonstrate the steps of opening and saving a picture in MS 3D paint given on pg 44 of the textbook. While demonstrating, ask students to follow along.

It would be recommended to have all software installed in the lab computers, however, in case, Paint 3D is not installed, the teachers are advised to demonstrate the above using MS Paint or Tux Paint. This is an important exercise to do, as this will help students become more comfortable in using Adobe Photoshop, as it is slightly advanced than the other 3 tools.

Once students are comfortable using Paint 3D, introduce them Adobe Photoshop which is relatively advanced tool in terms of image processing features. Also, prior to starting Adobe Photoshop, it is important to have some sample images already saved in computer. Teachers can take royalty free images from the following websites:

Unsplash (<https://unsplash.com/>)

Pexels (<https://www.pexels.com/>)

Elaborate the text Adobe Photoshop window given on pg 48 of the textbook by practically demonstrating it. Explain and demonstrate in detail the purpose of each component as explained in the textbook. Demonstrate different tools in the tool bar by referring to the text mentioned on pg 49 in the textbook. During class you can explain and demonstrate to students the workings of some tools, such as Lasso tool (pg 53), Magic Wand tool (pg 54), Copying Images (pg 56).

Allow students to perform the practice activity given on pg 56 of the textbook. For this activity, teachers can either look for and use the same images or can provide students with different images to work with. It is recommended that the images should be saved on each computer in the lab before starting the lesson so that the class time can be utilized optimally for performing practical activity.

Demonstrate the working of Brush tool (pg 58) and Gradient tool (pgs 58-59) by referring to the steps mentioned in the textbook.

Teachers can encourage students to try out other tools such as Drawing tools (pgs 59-60) and Transforming objects (pg 61) either at home or in class by referring to the steps mentioned in the textbook. In case, students are assigned this as an homework, it's advised that the teachers ask students to save their work and email it to the teacher or bring it to class in USB drive.

Take home activity:

Briefly demonstrate the interface of Canva to students. As homework, ask them to go through the topic Canva on pg 46 and 47. Assign them to design a poster or a social media post for any of the following:

1. School carnival invitation
2. Independence day sale
3. School admission ad.

Teachers may come up with their own ideas also. This activity will also cover the topic research skills as it will allow students to search for the templates on their own and the text-material for their poster.

Digital content:

Videos may be assigned before studying the relevant topic or after the topic is complete as a reinforcement.

List of videos:

1. MS Paint (part 1 - Introduction to interface)
2. MS Paint (part 2 - How to draw?)

Assessments: There is a specialised assessment section of objective questions based on the entire chapter. It can be assigned to students in part after completing specific topics in class or as a whole at the end of the chapter. It can be used for reinforcement of concepts as home task or as marked assessment.

Conclusion:

Wrap up the lesson by asking students to provide a recap of the concepts.

Assessment:

To assess student learning, you can assign them activity 1 mentioned in the In the Lab section given on pg 65. This can either be done at the end of the class or assigned as a home task.



Answer to Exercise



Objective Type Questions

1. Choose the correct answer

a) spraying paint	b) existing colours on the canvas (if a student selects option iv along with i, teachers can mark it correct, as eye dropper tool can select the background colour of an image. However, selecting only option iv is not the right choice.)	c) three dimensional effect	d) without altering their work in front of it	e) status bar
f) Lasso tool	g) any of these	h) line tool	i) by using the paint bucket tool	j) Cut Smooth
k) by creating a 3D object using the 3D shape tools (in addition to option ii, option i can also be correct, since MS Paint 3D provides a library of 3D objects that user can use to take 3D objects from)	l) ctrl+S			



Descriptive Type Questions

- a.** To open:
- Open MS Paint, by searching for it in the search bar,
 - A blank canvas appears
- To save a file in MS paint, do the following:
- Go to menu bar and click File
 - Click on Save
 - Select the location where you would like to save your file.
 - Enter a file name and click save
 - To save the file in a different file format, Click File > Save As and select the file type from the context menu.
- b.** MS Paint 3D is an advanced version of MS Paint with a better user interface and allows to add and create 3D objects.
- c.** In Tux Paint, files are saved in form of thumbnails, the file names are not required
- d.** Commonly used internet browsers are:
- Google Chrome
 - Safari
 - Microsoft Edge
 - Mozilla Firefox
- e.** To open an existing file in photoshop,
- Click File > Open
 - The open dialog box appears
 - Locate the file and select the file that you want to open
 - Click open.
- f.** To change the foreground colour in photoshop,
- Click the foreground colour in the tools panel
 - The colour picker dialog box opens
 - Drag the colour slider and select the desired colour by moving the cursor in the colour area
 - If you already have the hex code for the colour, enter that next to #
 - Click ok
- g.** Resolution: it is the number of pixels per inch that make up the image. The higher the resolution, the bigger the file in terms of size.
- h.** Alizeh can use the transform tool in Photoshop, to view the image in different perspectives such as:
- Scale: enlarge or scale down the image.
 - Rotate the image to different angles

- iii. Skew the image by dragging it up or down
- iv. Distort the image to stretch or compress
- v. Perspective: can apply perspective to the image
- vi. Flip horizontally or vertically.

The benefits of using transform tool is that it will allow her to edit her picture in a better manner, for instance, if she wants to focus more on the pet and less on the background, she can use scaling feature to scale the image. If she wants to add the picture of her pet in a poster and wants to place it in a tilted manner, she can do it through the rotate feature of transform tool.

- i. For scenario a, Bilal can use crop feature to remove the unwanted parts of the picture and focus more on the children in the picture

For scenario b, he can use the Smudge tool with two colours in an image

For scenario c, bilal can select the people in the picture using the Lasso tool, or any other selection tool and then use the transform tool to flip the people in the image

- j. For scenario i)

- i. Select the background or foreground icon from the tools panel
- ii. Select the colour from the dialog box that opens by dragging the slider and using cross-hair icon to select the desire shade
- iii. You can also enter hex code of a particular colour too
- iv. Click ok

For scenario ii)

- i. Select the crop tool from the tool bar,
- ii. Place mouse pointer on the image and click and drag to make a rectangular selection of the area that you want to keep
- iii. Release the mouse button, the crop frame appears, you can drag the corners of the frame to adjust the crop area
- iv. Press enter to crop the image

For scenario iii)

- i. Open the image, make a selection using the Marquee tool or the Lasso tool
- ii. Select move tool from the tool box
- iii. Press the Alt key and move the selection to the desired location

For scenario iv)

- i. Select the gradient tool
- ii. Select the desired Gradient type from the options panel
- iii. Click on gradient bar, select either from existing gradient or create a new one
- iv. Drag and release the mouse in the image
- v. To transform the image, go to Edit>Transform and select the desired transform action. Alternatively, use the keyboard shortcut Ctrl+T and right-click to select the transform action from the context menu.



Application Based Questions

- I) menu bar II) option menu III) image title bar IV) image window
- He will need to click on File from the menu bar and select New option.
 - The default name of the file is Untitled-1
- Rectangular marquee tool
 - Elliptical Marquee tool
 - Lasso tool



In the Lab

- For this part, teachers should either provide images to the students, or ask students to look for images to work with. Textbook topics, Selection tool on pg 59, Moving an image on pg 55 and copying an image on pg 56 will be helpful in attempting this.
- Encourage students to use research skills to attempt this question

Steps to change background colour in Tux Paint (https://www.youtube.com/watch?v=XCac01foI0I&ab_channel=Periwinkle):

- Open Tux Paint, by default the background colour is white
- Select the magic tool. The options appear on the panel on the right, click the down button to view the additional options
- Click the Fill option
- Select the desired colour from the palette below
- Click on the drawing canvas. The desired colour will be added

Steps to insert different shapes:

- Click on Shapes tool from the tool box
- Select any shape from the Shapes panel on the right
- After selecting the shape, select the desired colour you want on the shape
- Place the cursor on the drawing canvas and click and drag to make the shape

3 Image Processing and Research Skills



Group Project

1. Encourage students to use research skills to attempt this task. As a sample, a comparison between Gimp and Paint. Net is presented below:

GIMP	Paint.NET
Compatible with Windows and OS both	Can be used on Windows OS only
Not very user-friendly	User-friendly interface
Has more features similar to Photoshop	Not as feature-rich as GIMP

4

Algorithmic Thinking

Lesson plan

This is an overall lesson plan for the entire chapter. Depending on the number of periods, the ideas from this lesson plan can be used to make multiple lessons.

Resources: Textbook, teaching guide, Story Sequencing sheet

Pre-requisites: Not required

Introduction:

Provide students with Story Sequencing sheet (provided in the resource pack). Ask students to leave the problem statement section of the worksheet blank for now. Give them 3 minutes to work on it. After they are done, discuss their work collaboratively. For example ask them: “Did you wonder why you were given this task?”, “Why is it important to follow steps in the right sequence?”, “What could have happened if you would not have followed the order?” Gather the responses and introduce them to the concept of Algorithms.

Explanation:

Explain to the students that algorithms are a step by step process of solving a problem. Help them understand what the problem means and how to break down the problem to unpack it. Refer to the example given on pgs 66 - 67 of the textbook. Help students define the problem in form of a problem statement. Next, explain the benefits of algorithms (pg 70) and process of writing an algorithm (pg 71). Elaborate the real-life algorithm examples given in the textbook on pgs 71-73.

Once students are familiar with the algorithmic thinking, introduce them to the concept of conditional statements pg 73. Also explain them Loops, Sequence, Selection and Repetition concepts, by elaborating the examples given in the textbook.

It is recommended to deliver the instruction in two sessions.

Topics in first session:

1. Defining and stating the problem pg 66
2. Simple and complex problem pg 67
3. Algorithms and algorithmic thinking pg 68-69
4. Benefits of algorithms and writing algorithms pg 70-71
5. Examples pg 71-73

Topics to be covered in second session:

1. Conditional statements pg 73
2. Loops 74-75
3. Sequence Selection and repetition pg 75

Digital content:

Videos may be assigned before studying the relevant topic or after the topic is complete as a reinforcement.

List of videos:

1. Algorithmic Thinking - Boolean Operators
2. Algorithmic Thinking - IF-ELSE statement

4 Algorithmic Thinking

Assessments: There is a specialised assessment section of objective questions based on the entire chapter. It can be assigned to students in part after completing specific topics in class or as a whole at the end of the chapter. It can be used for reinforcement of concepts as home task or as marked assessment.

Conclusion:

Ask students to share their understanding of various concepts they have learned. Scaffold student learning for the concepts they find challenging through revision strategies.

Assessment:

At the end of session, conduct formative assessment by asking students about their understanding of algorithmic thinking.

Homework/Classwork:

Discuss objective questions in class and ask students to work on question 2 of application based questions given on pg 77. This question is recommended to be completed during the start of second session, as it will serve as a reinforcement activity for the concepts studied in the first session.



Answer to Exercise



Objective Type Questions

1. Choose the correct answer

a) if there is more than one way of solving the problem	b) to design a solution to any problem	c) to predict the outcome of an algorithm	d) >	e) A set of instruction for computer
f) to solve problem	g) how to find highest number in the list	h) if it solves the problem	i) Understanding the problem	j) i. Identifying patterns, breaking down problems and creating a plan.



Descriptive Type Questions

a. The algorithm can be written as follows:

```
START                GO TO pavement        LOOK at left and right
IF road=clear THEN    Cross the road        ELSE WAIT
```

Accept the answer if any student writes in form of numbered steps. The logic however should make sense.

- b.** The benefits of writing an algorithm are as follows:
 - i. Since algorithms define a set of rules, it makes it easier to solve problems.
 - ii. It allows to define the problem and provides a logical way to approach it.
 - iii. It allows to work with large amounts of data.
 - iv. It provides a road map to solve the problem
 - v. It helps analyze patterns and look for a solution, thereby enhancing analytical thinking skills.
- c.** Repetitive tasks are common in programming. The concept of iteration allows one to repeat a certain section of code or instructions a required number of times by writing only a few commands without having to manually repeat the instructions. For example, if a message needs to be printed 200 times, it would be efficient to do so with the help of an iterative statement rather than typing it manually.
- d.** The examples where IF ELSE can be used are:
 - i. Crossing road – cross the road if it is clear else wait.
 - ii. Making tea – put tea leaves if the milk boils else wait.
 - iii. Going out in rainy season – take umbrella if its raining else not.
- e.** Computational thinking (CT) describes a way of critical thinking and problem-solving. Whereas algorithmic thinking is a systematic way of approaching and solving problems. Both of them are very closely knit. Where on one hand CT allows to create technology, algorithmic thinking helps to determine the steps that will be involved in doing so. CT is characterized by allowing one to automate solutions through algorithmic thinking – which provides a roadmap and direction to achieve the desired goal.
- f.** The steps to design an algorithm are given below:
 - i. Identifying the goal to be achieved.
 - ii. Access or gather both current and past data.
 - iii. Find different ways to yield the required output.
 - iv. Use logical reasoning to draw a proper relationship between input and output.
 - v. Visualize the results.
 - vi. Monitor the results.
- g.** Conditional statements refer to the statements that allow the algorithm to take one or more path. It works by evaluating a condition and proceeds further if the condition is met else the algorithm takes an alternative route or set of instructions.
- h.** The finite loops repeat the specified steps or set of instructions a set or finite number of times. While an infinite loop runs forever unless stopped by an external factor.
- i.** The sequence statements represent the order of the steps in an algorithm. An example of sequence algorithm is given below:

```

START
ENTER firstnumber
ENTER secondnumber
ADD firstnumber+secondnumber=result
SHOW result
END

```



Application Based Questions

1. The steps to play snake and ladder game are given below:
 - i. Put your counter at the initial point in the board to begin the game.
 - ii. Move your counter according to the number of spaces shown in the dice
 - iii. If the counter lands at the bottom of the ladder, move up the ladder
 - iv. If your counter lands on the head of the snake slide to the bottom of snake
 - v. If either of this doesn't happen, proceed with the count in normal order
 - vi. The first player to reach the end or home is the winner

The algorithm for this will be as follows:

```
BEGIN
REPEAT
MOVE counter
IF counter=bottomLadder
climbup
IF counter=snakehead
climb down
ELSE
count+1
Until counter = home
STOP
```

2. The corrected sequence is given below:
 - i. Take a sheet of paper
 - ii. Write on the sheet of paper
 - iii. Fold the letter
 - iv. Insert in an envelope
 - v. Seal the envelope
 - vi. Write the address of friend on the envelope
 - vii. Post the letter



In the Lab

- a. Time conversion algorithm:

```
START
DEFINE h,m (this defines the placeholder for hour and seconds minutes)
READ h (takes user input for hours)
m=h*60
```

DISPLAY m

END

- b. To convert liters to ml ($ml=1/1000$ liters)

START

DEFINE ml, l (indicate value placeholders for milliliters and liters respectively)

READ l (take user input for liters)

$ml=l/1000$ (convert into ml).

DISPLAY ml

END

- c. The algorithm to sort toys in red and blue colour

START

DEFINE redBasket, blueBasket

READ toys (toys given as input by the user)

IF toys=RED

PLACE in redBasket

ELSE

PLACE in BlueBasket

REPEAT step 3



Group Project

1. To design an algorithm for planning a trip can include the following:
 - a. Analyzing the budget.
 - b. Keeping budget in mind, making a list of places that can be travelled within the specified budget.
 - c. Researching about the place, sites to visit, accommodation, etc.
 - d. Contacting tour guides to determine packages.
 - e. Preparing for the trip.
2. A simple algorithm to control the movement of robot is given below:

START

MOVE FORWARD

MOVE BACKWARD

MOVE RIGHT

MOVE LEFT

END

5

Scratch: An Introduction to Computer Programming

Lesson plan

This is an overall lesson plan for the entire chapter. Depending on the number of periods, the lesson plan can be split into two. It is recommended to organize the class in such a manner that students get some practice time at the end of the class.

Resources: Textbook, teaching guide

Pre-requisites: Algorithmic thinking, computational thinking, internet search techniques.

Introduction:

Begin the lesson by providing students a brief recap of algorithms and algorithmic thinking. At this point you can use inquiry based learning to activate previous knowledge. For example you might ask students: “What do you remember about algorithms?”, “Why are algorithms helpful?” Build on these responses, by introducing them with the concept of Computer Programming. Refer to the text on pg 78 and help them understand applications of computer programming. Explain to them the difference between algorithms and program given on pg 79.

Explanation:

Explain them difference between high level languages and low-level languages (pg 80). Once students have understood the basic concepts related to computer programming, introduce them to Scratch software. Elaborate the text given on p 81.

Ask students to search the internet and download the software. Let students look for the correct link on their own. This way students will be able to use their internet research skills they learnt in chapter 3. Provide appropriate cues to students so that they know where to download the software from. For example you can ask them: “On the search results page, which link do you think you should open to download the software?” You can visit each student individually to see if they are searching for the right link. Provide support to them where needed. You can also ask the students to directly type in the web address given on pg 82 of the textbook. Encourage students to read through the installation procedure and download the software, provide help to students where needed. It is recommended that at this stage, teachers must closely monitor students’ work, to ensure that all students are on the same page.

Teachers are recommended to divide the lesson delivery into two sessions. But this depends on the how well the class is responding to the instruction overall. An approach is suggested below:

Topics to be covered in first session:

1. Downloading scratch – pg 82
2. Introduction of following concepts:
 - a. Menu bar – pg 83-84
 - b. Code tab (all the block palette) – pg 84-85
 - c. Costume tab – pg 86
 - d. Sprite – pg 86

Topics to be covered in second session:

1. Script – pg 88
2. Use of scratch script, Go and Stop button – pg 90

3. Paint Editor – pg 90
4. Sound tab – pg 92

Digital content:

Assessments: There is a specialised assessment section of objective questions based on the entire chapter. It can be assigned to students in part after completing specific topics in class or as a whole at the end of the chapter. It can be used for reinforcement of concepts as home task or as marked assessment.

Conclusion:

Ask students to share their understanding of various concepts they have learned. Scaffold student learning for the concepts they find challenging through revision strategies.

Assessment:

Provide a brief recap of the concepts covered at the end of each session. As part of formative assessment, ask students to complete Match the Box task given in Exercise on pg 93. Objective type questions given on pg 92 can be covered as reinforcement activity at the end of second session.

Homework/Classwork:

Discuss objective questions (pg 92) in class and ask students to work on Match the blocks given on pg 93. Match the blocks activity can be done at the start of second sessions, as it will serve as reinforcement activity for the topics covered in first session.

Answer to Exercise

Objective Type Questions

1. Choose the correct answer

a) scratch	b) visual programming language	c) list of instructions to tell another program what to do	d) list of backgrounds.	e) Event blocks
f) 180 to 180 pixels, -240 to 240 pixels	g) looks blocks (<i>the correct answer is label blocks not given in the option list</i>)	h) sound		

Match the blocks:

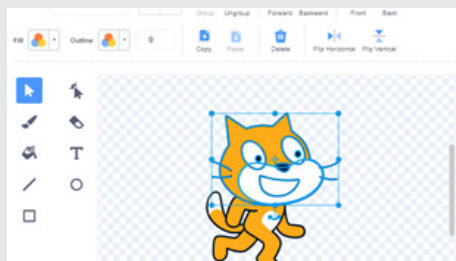
- a. Events = when 'space key' is pressed.
- b. Control = if ° then
- c. Sound = play note '60' for '0.5' beats
- d. Motion = turn anticlockwise 15 degrees
- e. Looks = if ° then

Descriptive Type Questions

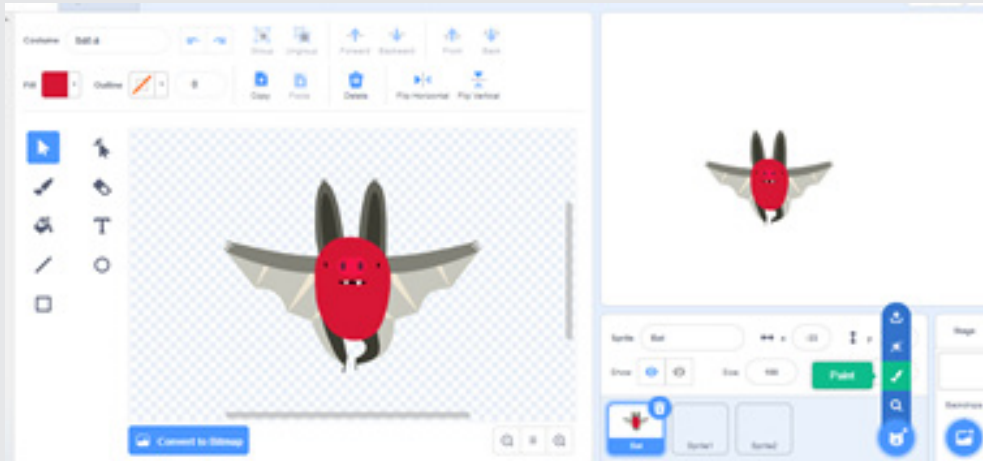
- a. Computer program in simple words, is defined as a set of instructions in a programming language for a computer to execute.
- b. The differences between algorithm and program is explained below:

Algorithm	Program
A set of instructions to complete as task	It is the implementation of an algorithm in a programming language to be executed by computer.
It is written at design phase.	It is written during implementation phase.
It is written for humans to understand.	A program is written for a computer to understand.
It is not dependent on the software or OS.	It requires an OS to run and execute.

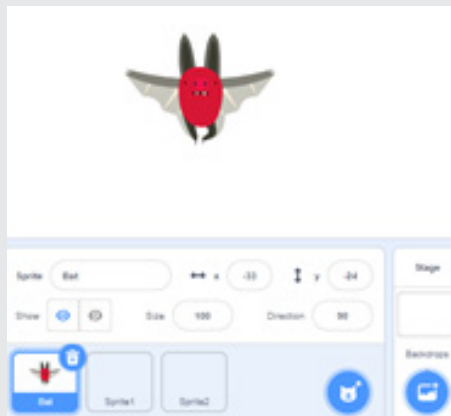
- c. The applications of computer programming are given below:
 - i. They are used to build games
 - ii. Used to program embedded systems. Programs are embedded in washing machines and microwaves
 - iii. Programming languages are used for processing data analytics and data sciences
 - iv. Computer programs are used in mobile phones such as SMS chat and voice communication
- d. The costume tab in Scratch provides a way to dress up a character or sprite.
- e. The block palette in Scratch consist of blocks that are similar to a puzzle and can be dragged and dropped in the script area to write the program. The block palette includes the following blocks:
 - i. Motion blocks
 - ii. Looks block
 - iii. Sound block
 - iv. Events block
 - v. Control block
 - vi. Sensing block
 - vii. Operators block
 - viii. Variable block
 - ix. My blocks
- f. To delete the costume, select the costume using the selection arrow. Click the delete button given in the panel above. You can also press the delete key on the keyboard to delete the costume.



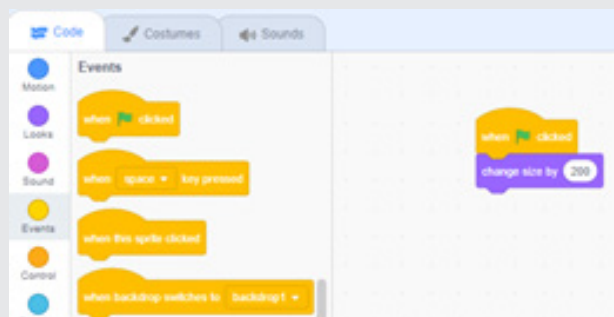
- g.** To customize the sprite:
- i. Select the sprite from Choose the Sprite option.
 - ii. Select the paint brush icon.
 - iii. The paint editor opens.
 - iv. From here you can change/customize the sprite as you like.



- h.** There are two ways to change the size of the sprite in scratch.
- i. In the first way, you can directly change the size by manually entering the size of the sprite in the sprite info panel.



- ii. In the second way, you can change the size of the sprite through looks and event block.



- i. The description of blocks present in block palette is given below:
 - i. Motion blocks: helps the sprite to move in different directions.
 - ii. Looks block: allows to change the color, size and costume of the sprite.
 - iii. Sound block: allows to add sounds to your program. You can add sound from the default sound library or can upload from your computer.
 - iv. Events: tells scratch when to start the program by specifying a triggering movement such as clicking the green flag.
 - v. Control block: provides options such as wait, use loops or conditional statements.
 - vi. Sensing: detects things such as position of mouse pointer on the screen.
 - vii. Operators: allows to perform calculations on both numbers and text also known as strings.
 - viii. Variables: allows to save the variables that are used in the program.
 - ix. My blocks: allows to create your own blocks for a sprite. You can name this block and define what the new block does using other scratch blocks.
- j. Control blocks are colour coded as light blue. They provide options to control the program, such as specifying the number of times a instruction should repeat through loops. They also provide options such as wait and conditional statements.



Application Based Questions

1. b) (X:0 Y:0)
2. d) top-right corner



In the Lab

1. Encourage students to download and install the scratch software. Guide them where needed.
2. To change the sprite, click on Choose the Sprite and select a sprite of your own choice. Encourage students to perform this.
3. Ask students to look for a background image and download it on their computer. Select Upload a Background button to upload the backdrop.



Group Project

Ask students to work in groups or pair to explore the working of each block.

6

Basic Programming Constructs with Scratch

Lesson plan

This is an overall lesson plan for the entire chapter. Depending on the number of periods, the lesson plan can be split into two. It is recommended to organize the class in such a manner that students get some practice time at the end of the class.

Resources: Textbook, teaching guide, KWL sheet, Scratch 3

Pre-requisite: Algorithmic thinking, computational thinking, familiarity with Scratch 3 interface.

Introduction:

Provide a print of KWL chart to each student (provided in the resource pack). Give them 5 minutes to fill it. Teachers must note that this is not an assessment and should be considered as an ungraded activity. Students are only expected to share their understanding of the concepts learnt. At this point, ask students to only complete the Know and Wonder column of the KWL chart. The Learned section of the chart will be filled by students at the end of the lesson. In the next 5 minutes, discuss the student responses collaboratively. This will give you an idea of how well students remember the concepts learnt in previous chapters. Scaffold student learning where needed.

Explanation:

Before explaining, ensure that students have Scratch 3 installed and opened on their computers. Write the terms Sequence, Selection/conditionals, Events, Variables and Repetition/Loops on the board. Start explaining these concepts to students by referring to the text given on pg 95 – 97. Once you have elaborated the definition of these concepts, ask students to turn to their PCs and search for these programming constructs in the block palette. For example, you can ask students: “where do you think Loop statements can be found in Scratch?” Let students share their responses collaboratively.

Next, demonstrate how these programming constructs can be used to create a program in Scratch. As an example, you can demonstrate the examples of finite and infinite loop illustrated on pg 97 of the textbook. Also encourage students to engage in hands-on practice with these examples. To instill the knowledge of programming in students, it is advised that teachers must demonstrate the given examples by changing the values in the programming blocks and use inquiry to help students develop computational and analytical skills. For instance, teachers can ask students: “What do you think will be the output of the sprite if the value 10 is changed to 5 or 15?”, “Try selecting a different sound for the cat and see how it works?”

Help students understand how they can add blocks from the block palette to write a script (pg 99). Explain the concept of variables to students by referring to the text given on pg 98 and 99. Ask students to practice and run the program given on pg 100. Once they are done, ask them about what they understand by the script. For example, you may ask: “What do you think If on edge, bounce does?” “What do you think will happen if you change the number of steps to 12?” The reason for asking these questions is to help students think beyond the examples given in the book. Encourage them to try different programming constructs, change the order of the blocks and analyze the result of all such changes and share with the class.

In the second session, ask students to practice the sample program given on pgs 101-107 of the textbook. Ask them to read through the text and make a similar script. Once they are done, ask them to attempt Group project on pg 110. Monitor students work closely and provide support where needed.

Teachers must practice all the examples given in the textbook on their own as well before delivering the

6 Basic Programming Constructs with Scratch

instruction. This way they will be aware of the challenges that students would come across in class during the instruction. Teachers will then be able to tailor their instruction accordingly.

Digital content:

Videos may be assigned before studying the relevant topic or after the topic is complete as a reinforcement.

List of videos:

1. Basic Programming - For Loops
2. Basic Programming - While Loops

Assessments: There is a specialised assessment section of objective questions based on the entire chapter. It can be assigned to students in part after completing specific topics in class or as a whole at the end of the chapter. It can be used for reinforcement of concepts as home task or as marked assessment.

Conclusion:

Ask students to share their understanding of various concepts they have learned. Scaffold student learning for the concepts they find challenging through revision strategies

Assessment:

Provide a brief recap of the concepts covered at the end of each session. As part of formative assessment, discuss the Application Based Questions 1 and 3 given on pg 110.

Homework:

1. In the lab – pg 110
2. Descriptive questions – pg 109



Answer to Exercise



Objective Type Questions

1. Choose the correct answer

a) use the “jump” block OR use the travel block	b) if-else	c) use the “set the variable” block	d) none of these are correct	e) use the “if” block	f) broadcast
g) none of these are correct	h) wait	i) use the “clone” block	j) repeat		



Descriptive Type Questions

a. Conditional statements are an important programming construct and are used as they allow the

user to choose between two or more paths of action. They control the flow of the program based on true or false conditions. For example, in a percentage calculation program, if the percentage is more than 70 then the result will display as good else it will be displayed as work-hard.

- b. There are two ways to change the backdrop in Scratch. One way is to manually change the backdrop by clicking the Choose a backdrop button. The other way is to change through the Looks block palette. The block “switch backdrop to” can change the backdrop of the stage area.
- c. To add a code block, simply drag the required block from the block palette and drop it in the script area. The blocks are placed in form of stack. To delete a block, drag the block out of the script and drop them over the block palette. Alternatively, you can also select and right-click the block and select Delete Block from the menu. If you delete a stack block, all the blocks connected to the stack will also be deleted.
- d. Variables are used to store text or numeric values. They can be used to set pre-defined values in the program or can be used to store the values that the user enters at the run-time. There are two types of variables in Scratch:
 1. **Built-in variables:** scratch has a built-in variable named as My Variable. It can be used directly to store values.
 2. **User-defined variables:** the Make a Variable button in Scratch allows to create the user-defined variables. These variables are defined by the programmer to store values or take input from the user.
- e. The variables can store one piece (text or numeric) of information at a time. Whereas, lists can store multiple bits of information.
- f. To change the value of variable, simply drag the set variable block into the script area and specify the value. To change the value, drag and drop change variable block and specify the required number by which you want your variable to change.



Application Based Questions

1. a) Events block
b) when key pressed
2. She should first drag play sound block from the Sound palette and drop in script area. Next, she should select record and record the sound to be included.
3. He can accomplish this by using Repeat until block from Control palette and then adding move block from Motion palette underneath it. He will also need When clicked block from Events to trigger the program to begin.

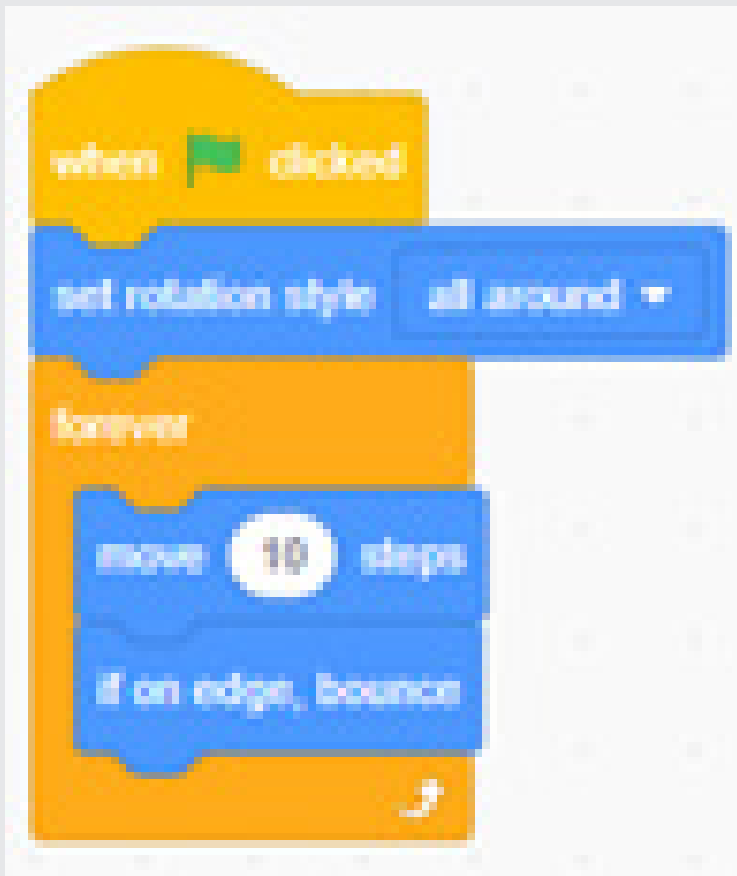


In the Lab

Project 1: The teachers can use the link below for their reference:

<https://scratch.mit.edu/projects/207081218>

to show the butterflies fluttering in the garden, teachers can refer to the script below:



Project 2: A sample story project that teachers can refer to is:

<https://scratch.mit.edu/projects/119768964>

Project 3: There are plenty of game projects available on Scratch website for reference:

<https://scratch.mit.edu/search/projects?q=simple%20game>



Group Project

Encourage students to work in groups to accomplish this project. This project is similar to the example illustrated on pgs 101-107, with slight modifications.

Lesson plan

This is an overall lesson plan for the entire chapter. Depending on the number of periods, the lesson plan can be split into two. It is recommended to organize the class in such a manner that students get some practice time at the end of the class.

Resources: Textbook, teaching guide, Digital Life 101 handout

Pre-requisite: Internet search techniques

Introduction:

Begin the lesson by showing a short video clip online that explains the concept of digital citizenship and why it matters. Introduce the concept of digital life and its importance. Start a class discussion by asking students about their favourite online activities and experiences. Highlight the benefits and challenges of the digital world. Students must be encouraged to share their ideas and thoughts.

Discuss the six key digital citizenship topics:

- Media Balance and Well-Being
- Privacy and Security
- Digital Footprint and Identity
- Relationships and Communication
- Cyberbullying, Digital Drama, and Hate Speech
- News and Media Literacy

Explanation:

Build on student understanding by introducing them to the idea of Digital Citizenship and Digital Literacy by elaborating the text given on pg 111 of the textbook. Teachers are advised to split the chapter in two sessions.

Topics to be covered in first session:

1. Digital citizenship and digital literacy – pg 111
2. Online safety – pg 112
3. Ethics pg – 114
4. Copyrights – 114
5. Dangers of internet – pg 116

Topics to be covered in second session:

1. Free vs open source software – pg 116
2. Plagiarism – pg 117
3. Health issues of using ICT devices – pg 118

4. Hazards of using ICT devices – pg 119

Some video resources that teachers may find useful are:

1. Internet safety tips

https://www.youtube.com/watch?v=X9Htg8V3eik&ab_channel=CommonSenseMediaforFamilies

2. Cyberbullying

https://www.youtube.com/watch?v=6ctd75a7_Yw&ab_channel=CommonSenseEducation

3. Power of Words:

https://www.youtube.com/watch?v=kRHjmYO-c6w&ab_channel=CommonSenseEducation

4. Digital trail

https://www.youtube.com/watch?v=7bRZdUtmH8k&ab_channel=CommonSenseEducation

5. Copyright

https://www.youtube.com/watch?v=XzzkSZ0Jrko&ab_channel=GCFLearnFree

6. Plagiarism

https://www.youtube.com/watch?v=PzZsButRaHs&ab_channel=GCFLearnFree

7. How is Phone changing you

https://www.youtube.com/watch?v=W6CBb3yX9Zs&ab_channel=AsapSCIENCE

https://www.youtube.com/watch?v=7rbDIx69ORE&ab_channel=VideoWritingPrompts

Digital content:

Videos may be assigned before studying the relevant topic or after the topic is complete as a reinforcement.

List of videos:

1. Being a good digital citizen

Assessments: There is a specialised assessment section of objective questions based on the entire chapter. It can be assigned to students in part after completing specific topics in class or as a whole at the end of the chapter. It can be used for reinforcement of concepts as home task or as marked assessment.

Conclusion:

Ask students to share their understanding of various concepts they have learned. Scaffold student learning for the concepts they find challenging through revision strategies.

Assessment:

Provide a brief recap of the concepts covered at the end of each session. As part of formative assessment, teachers must choose any of the following game from the game kit below and ask students to play it on their PCs. This game kit is an excellent tool to help students make smart decisions when using internet.

https://beinternetawesome.withgoogle.com/en_us/interland/landing/reality-river

The different games available in the Kit are:

1. Reality River
2. Mindful Mountain

3. Tower of treasure
4. Kind Kingdom

Homework/Classwork:

Following can be done as classwork.

1. Objective type questions – pg 120

Following can be given as homework:

- | | |
|--------------------------|--------------------------------|
| 1. Descriptive questions | 2. Application based questions |
| 3. In the Lab | 3. Group project |

Answer to Exercise

Objective Type Questions

1. Choose the correct answer

a) the norms of appropriate, responsible technology use	b) all types of messages we receive online	c) tell a trusted adult and block the person who is bullying	d) your favourite sports	e) intellectual property rights	f) to keep users safe by hiding facts that may endanger them
g) juice	h) drinking water beside the computer				

Descriptive Type Questions

- a. The three essentials for good digital citizenship are given as follows:
 1. Digital access: it means the ability to connect with one another and use internet to find the information.
 2. Digital etiquette: it means to treat other people on internet in a respectable manner regardless of their origin and to avoid cyberbullying or hate speech on internet.
 3. Digital literacy: it refers to the usage of technology and accessing information online.
- b. Computer ethics are concerned with the norms and standards related to the use of computers. Computer ethics are important as they help us understand and ensure that our usage of computers does not affect others. It also helps us understand and be mindful of the potential risks such as hacking or privacy breaches. Being aware of computer ethics also helps us to protect our personal information.

The computer ethics are given below:

1. One should not interfere with other people's network.
 2. One should not use a computer to steal.
 3. One should not snoop around in other people's computer files.
 4. One should be mindful of the social consequences of the programs that you are writing or the system you are designing.
- c. Prolong and continuous use of ICT devices can cause potential problems to health. These may include:
1. Digital eye strain: this is caused by looking at the monitor screen for prolonged periods of time. The symptoms include: dry eyes, redness around eyes, headaches and blurred vision. To avoid digital eye strain, one should take breaks by looking away from computer screen at regular intervals. It is also good to use anti glare filters on the monitors, or screens to cut down screen reflections.
 2. Disrupted sleep: using mobiles, laptop or tablets before sleep may disrupt the sleep cycle. This is because the blue-light emitted from these devices simulates and makes the person less sleepy. To avoid sleep disruption, its important to avoid using gadgets one hour before sleep. Dim the screen brightness when using the phones in evening.
 3. Repetitive Strain Injury (RSI): it refers to the pain caused by repeated movement of part of the body. Prolonged use of mouse or keyboard causes RSI. Children may suffer from RSI due to prolonged use of mouse and keyboard when working or playing games. To avoid this, its important to use a wrist-rest to support the wrist while typing or using the mouse. It is important to take regular breaks from typing or using the mouse.



Application Based Questions

For both of these questions, ask students to use internet search techniques to attempt this.



In the Lab

1. Let students search for the copyright laws on the internet. You may support them during their research. Encourage students to use MS office tools which they have learnt and choose the best tool to prepare the presentation.
2. Ask students to refer lab rules on pg 113 and make a poster. You can also have a poster competition in class to engage students. Alternatively, you can encourage students to write their own rules and include in poster. Students can also look for poster ideas on internet.
3. Ask students to reflect on their learnings and suggest appropriate ways of using computers. They may also make use of internet to gather information.



Group Project

For both the tasks, help students look for information on the internet. The video resources provided can also be of great help for students in accomplishing the group project.

Lesson plan

This is an overall lesson plan for the entire chapter. Depending on the number of periods, the lesson plan can be split into two.

Resources: Textbook, teaching guide.

Pre-requisite: None.

Introduction:

Ask students to carefully watch the video given in the link below and take notes on important concepts.

(https://www.youtube.com/watch?v=XQ4RESzO2wI&ab_channel=Scholastic).

After students have watched the video, ask them to reflect on it. Support their reflection process by asking guiding questions such as: What business idea did you see in the video? What is the secret of success told in the video? Why do you think knowledge is important before starting anything?

Explanation:

Elaborate the concept of entrepreneurship by referring to the text given on pg 122. Ask students to read through the qualities of entrepreneurs and share their understanding. You can also show the video Anatomy of Entrepreneur to students. Ask them to identify the qualities required for entrepreneur. Elaborate these further by referring to the text given on pg 124. Next, explain different types of entrepreneurship to students given on pg 124 and 125.

Explain to students the concept of digital entrepreneurship and pinpoint the difference between traditional and business entrepreneurship. Ask students to read through the process of entrepreneurship given on pg 127 and 128 and share their understanding.

Digital content:

Assessments: There is a specialised assessment section of objective questions based on the entire chapter. It can be assigned to students in part after completing specific topics in class or as a whole at the end of the chapter. It can be used for reinforcement of concepts as home task or as marked assessment.

Conclusion:

Ask students to share their understanding of various concepts they have learned. Scaffold student learning for the concepts they find challenging through revision strategies.

Assessment:

Provide a brief recap of the concepts covered at the end of each session. As part of formative assessment, discuss objective type questions in class.

Homework/Classwork:

Following can be done as classwork.

1. Objective type questions – pg 129

Following can be given as homework:

1. Descriptive questions
2. Application based questions
3. In the Lab
4. Group project



Answer to Exercise



Objective Type Questions

1. Choose the correct answer

a) start a business enterprise	b) ability to set up a business	c) technology	d) business identity	e) true	f) being creative and adaptable
g) all of the above	h) a document outlining the steps needed to start and run successful business				



Descriptive Type Questions

- a. The different types of entrepreneurship are listed below:
 - i. Small scale entrepreneurship: these are limited in terms of employees, finances and other resources. The services or products offered by them are confined to a certain geographical location. Such as bakeries, flower shop, etc.

- ii. Scalable entrepreneurship: these businesses have the goal to expand their operations after certain time period. These entrepreneurs seek investments to expand their human resources and the production of products or services. They are called startup entrepreneurship.
- iii. Large scale entrepreneurship: they have many employees and have high turnover of the products they offer. They operate from multiple locations. Examples include automobile or mobile industries.
- iv. Social entrepreneurship: these businesses aim at making a difference in the life of people or society. Such entrepreneurs do not aim at making money rather they aim to add value through development projects. For example, setting up healthcare centers fall under this kind of entrepreneurship.

b. The entrepreneurship is a 6 step process, which is given below:

- i. Idea generation: the entrepreneur identifies the problem faced by the people. He/she then thinks of the ways to address the problem. This idea generation process is the first step towards the development of product or service.
- ii. Opportunity evaluation: once the idea is pinned down, the entrepreneur then does the market research, to get into the depth of the problem identified and the solutions that already exist. During this stage, the entrepreneur evaluates if a market opportunity exists for their product or service.
- iii. Planning: a business plan is developed, that outlines how and why a new business is being created. It shows a roadmap that the company would follow for a certain number of years.
- iv. Company formation: once the business plan is in place, the company is formed and registered with a name. The entrepreneur forms a team of people who will work together to achieve their targets.
- v. Launch: during the launch stage, the product or service is advertised on different platforms such as print media, electronic or social media.
- vi. Growth: once the company starts generating revenue and meets its financial targets, the entrepreneur plans the growth strategies of the company. Investment can be required for growth.



Application Based Questions

1. Ahmed can increase his sales by exploring digital means of promoting business. He can set up an e-commerce store and sell his products there.
2. Sehar can take the following steps:
 - a. Establish her online presence on e-commerce websites such as Shopify and other social media platforms such as Instagram and Facebook
 - b. Analyze her competition. Such as analyzing which bakers are already selling online and

what they are doing differently to attract customers. She can then think of her unique selling strategy and implement it.

- c. She should look for someone who can manage her social media pages.
- d. She should identify the order placement, delivery and payment methods.
- e. She will also require someone to deliver the parcels to the customers.



In the Lab

1. Teachers can provide the Kids Business Plan template provided in the resources folder to the students. This template will be a good starting point for students to begin writing their business plan.
2. For this, the teachers must encourage students to look for entrepreneurs in their school or near their home and interview them. The students can choose to interview the following:
 - a. Van service driver
 - b. School canteen person
 - c. Tailor
 - d. School principal/owner



Group Project

Encourage students to identify a problem, determine the products and services already available to address the problem and define their own solution and its uniqueness.

The Computer System



Worksheet 1A

Choose the correct answer

1. Google the fastest search engine was found in
 - i. 1998
 - ii. 2007
 - iii. 2004
 - iv. 1997
2. The first general-purpose computer was called:
 - i. Abacus
 - ii. Analytical engine
 - iii. Difference engine
 - iv. Pascaline
3. IBM PC and Apple Macintosh are an example of:
 - i. Second generation computers
 - ii. Third generation computers
 - iii. Microprocessor
 - iv. Fourth generation computers
4. _____ is an example of eBook reader
 - i. Kindle
 - ii. Palmtop
 - iii. Tablet
 - iv. None of them
5. Collection of facts is called:
 - i. Data
 - ii. Information
 - iii. Both i and ii
6. _____ handle both numeric and text data
 - i. ENISAC
 - ii. EDVAC

iii. UNIVAC

iv. Mark-1

Fill in the blanks with the correct words:

1. _____ is considered as the father of computing
2. Facebook was founded in _____ by _____.
3. ENIAC stands for _____.
4. _____ refers to the set of programs stored in the computer for quick calculations.
5. AI is a field of computer science, that aims for computers to _____, _____ and _____ as humans do.

Observe the characteristics of early calculating devices in the table below and write the name of the devices.

Device	Characteristics
	<ol style="list-style-type: none"> 1. Numbers carved on bones or strips of wood 2. Used to find square root of the number
	<ol style="list-style-type: none"> 1. Invented in 1641 2. Had moveable wheels 3. Can divide numbers up to hundreds and thousands
	<ol style="list-style-type: none"> 1. Consist of wooden frame with beads sliding on wires 2. Used to teach arithmetic to blind students 3. First calculating device
	<ol style="list-style-type: none"> 1. Used to prepare mathematic table
	<ol style="list-style-type: none"> 1. First general purpose computer 2. Had input, output and memory devices

Observe and complete the table below:

EDSAC	
	First fully electronic digital computer
	First electronic computer that used stored programs
EDVAC	
	First computer to handle numeric and text data

Observe the characteristics and examples in the table below and identify the generation of the computer.

Generation of computer	Characteristics	Example
	Large size, small storage size High power consumption Large installation area Difficult to program	EDSAC, EDVAC
	Smaller size Increased storage capacity Different programs could be run together	IBM 360 series and 370 series
	Smaller, faster, cheaper Contained the components of all modern-day computers – printer, storage capacity, operating system, etc Programming languages like COBOL, FORTRAN	IBM 1401 RCA 501
	Very high speed computer power Might overcome lack of thinking power	CRAYCS 300

Short answers:

1. What do you understand by production line arrangement?
2. Mention two advantages of ICT.
3. Mention any three applications that you use most on your mobile phone.

Higher-order questions:

1. You have read about various ICT devices in the chapter. Mention any one ICT device you use most frequently. Reflect on how it helps you perform your daily tasks. You can also reflect on the applications that you use most on the device and how is it useful to you.
2. You have read and understood the different generations of computers and have observed how they have evolved over time. With this understanding, critically reflect on the evolution of computers and also share your views on how AI would change the way we do things today.

The Computer System



Worksheet 1B

Choose the correct answer:

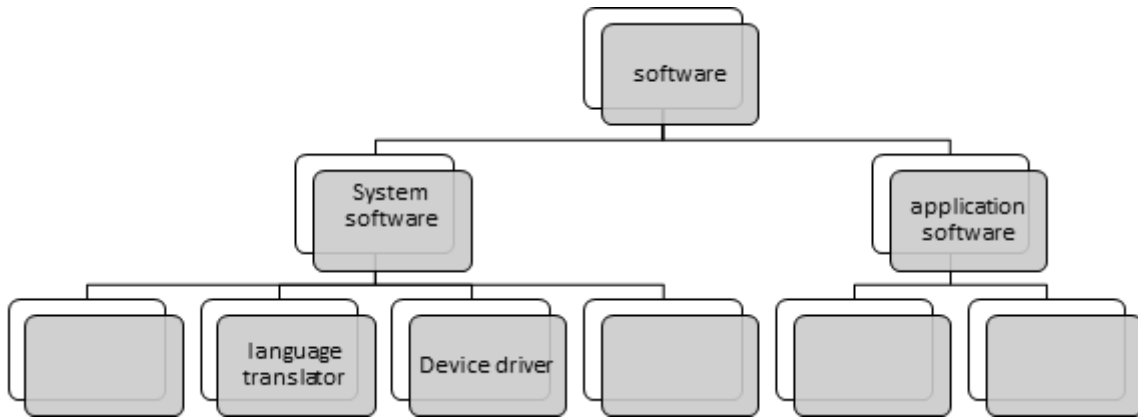
- Which of the following is not an example of an input device?
 - Scanner
 - Mouse
 - LCD
 - Barcode reader
- _____ can store enormous data and are scanned by smartphones
 - QR codes
 - Scanner
 - Both I and ii
 - Smartcard reader
- _____ is used for creating high-quality graphics and charts
 - Braille printer
 - Plotter
 - Kindle
 - Both I and ii
- CPU has two units:
 - Input and output unit
 - Arithmetic and logical unit and Control unit
 - Processing unit and secondary storage unit
 - All of them
- _____ allows to transmit and store data in remote locations
 - Solid stated drive
 - Expansion slots
 - Cloud storage
 - Hard disk drive

Fill in the blanks with the correct words:

1. SSD uses _____ to store data indefinitely.
2. _____ is used for the startup process of the computer.
3. The program translated by a compiler in a high-level language is called _____.
4. Examples of system utilities software are _____, _____ and _____.
5. Scientific calculator is an example of _____.

Short answers:

1. Mention any two cloud storage services.
2. What is the difference between RAM and ROM? Mention any two.
3. Briefly define your understanding of compiler, interpreter, and assembler.
4. Complete the flowchart below:



5. Mention any two similarities and two differences between HDD and SDD.

Higher-order questions:

1. You have a profound understanding of various types of software. Mention any one application software that you use, and reflect on its features and its limitations.
2. How would you suggest improving the limitations of the software you mentioned above? Which additional features would you like to add? How do you think they would be useful for other users as well?
3. Storing data on the cloud allows you to access it from anywhere, which is a great convenience. However, this convenience comes at a risk as well. What do you think those risks could be? What steps you must take when storing data on the cloud to prevent those risks?

The Operating System



Worksheet 2

Choose the correct answer:

- Which of the following is NOT a function of OS?
 - Memory management
 - File management
 - Cloud storage management
 - User interface
- You can find all your installed programs by clicking on:
 - Start Menu
 - Task View
 - System Tray
 - All of them
- Task view was introduced in which version of Windows?
 - Windows 8
 - Windows 7
 - Windows 11
 - None of them
- Which component of Windows would you access to view notifications and updates?
 - Action center
 - System tray
 - Start menu
 - Both a and b
- _____ is capable of storing and reading information on a computer.
 - Start menu
 - Files
 - Drive
 - Action Center

6. _____ is the primary location in Windows to locate your files and folders.
- Task bar
 - System Tray
 - Start Menu
 - Both a and c
7. Action center allows to control the following:
- Notifications
 - Network visibility
 - Brightness
 - All of them

Fill in the blanks:

- The AI virtual assistant present in Windows OS is _____.
- _____ is a virtual desktop that lets you switch between different tasks.
- _____ OS provides no standard version.
- OS has two major interfaces _____ and _____.
- _____ -our list of options for users to select from.

Observe the picture of the Windows desktop and label the following:

Start menu, action center, task view, folders, files, desktop, system tray, and taskbar.



Complete the table below:

OS	Cost	Supporting tools
Windows		
	Free of cost	A huge choice of applications is available on the Play Store
iOS	Free of cost	
Linux		

Short Answers:

1. State the difference between CLI and GUI
2. Mention two distinguishing features of the folder
3. Complete the following
 - a. Copy _____
 - b. Ctrl + Y _____
 - c. Library Panel _____
 - d. Right Align _____
4. How do you rename a file? In what instances, you might want to rename a file? Mention any two.
5. How is the drag-and-drop option helpful?

Higher-order questions:

1. Why do you think it is beneficial to organize files into folders and sub-folders? Are there shortcomings in doing so?
2. Which OS do you use mostly? Name any one feature that you like most and why? How does that feature help you in accomplishing your task? Which feature would you like to improve?
3. Why do you think one might need to copy, cut and paste files?

Image Processing and Research Skills



Worksheet 3

Fill in the blanks:

- _____ is a bitmap image format that supports animation and uses lossless compression.
 - BMP
 - JPEG
 - GIF
 - None of them
- Which of the following is not a file format supported by MS Paint.
 - PNG
 - Docx
 - JPEG
 - GIF
- _____ helps to select sample colours based on existing colours from the canvas.
 - Eyedropper tool
 - Paint bucket tool
 - Swatches panel
 - All of them
- _____ is a feature in Paint 3D that allows users to view content from different angles.
 - 3D doodle
 - Line and curve tools
 - Remix3D.com
 - Both a and c
- _____ allows you to add starter pictures and add your drawings to it.
 - Tux Paint
 - Adobe Photoshop
 - MS Paint
 - All of them

6. _____ saves files as thumbnails.
- MS Paint
 - Adobe Photoshop
 - Tux Paint
 - All of them
7. _____ has a rich library of templates and allows users to work with them by simply using drag and drop method.
- MS Paint
 - Adobe Photoshop
 - Canva
 - All of them
8. _____ in Adobe Photoshop displays options that are available for tools.
- Menu option
 - Option panel
 - Tools pane
 - Both b and c
9. _____ in Adobe Photoshop allows to mark, scale, or measure length.
- Tools panel
 - Options bar
 - Analysis menu
 - All of them
10. Each pixel in a bitmap is represented by _____.
- RGB colours
 - Grayscale
 - Single colour
 - None of them
11. _____ is used to select adjacent areas of the same colour in the image.
- Magic Wand tool
 - Transform tool
 - Colour picker
 - Scale option

Fill in the blanks with the correct words:

1. _____ allows people to retrieve information from different parts of the web.
2. _____ combines two or more colours blended together.
3. 2D cutouts in Paint 3D can be created by using _____ and _____.
4. Image processing allows creating, _____ and _____ drawings.
5. _____ in Adobe Photoshop allows to correct images.
6. Vector shapes can be created by using _____ in Adobe Photoshop.

Short questions:

1. **The table below shows various features found in different image processing tools MS Paint, Canva, Paint 3D, and Adobe Photoshop. Observe these features and mark the appropriate tool where they are found.**

Feature	MS Paint	Paint 3D	Adobe Photoshop	Canva
Free form select tool				
Zoom tool				
Colour picker/eyedropper tool				
Transform tool				
Templates for various design purposes				
3D doodle				
Lasso tool				
Crop feature				
Drag and drop actions				
Remix3D.co Or Remix 3D				
Magic Wand tool				
Replay				

2. Complete the abbreviation for these terms below:

- a. BMP _____
- b. PNG _____
- c. GIF _____
- d. TIFF _____
- e. JPEG _____

3. Write the functions of the following:

- a. Airbrush tool _____
- b. Eyedropper tool _____
- c. Crop tool _____
- d. Magic Wand tool _____
- e. Text tool _____
- f. Gradient tool _____
- g. Blur tool _____
- h. Clone stamp tool _____

4. Differentiate between the Lasso tool, Polygon lasso tool, and magnetic lasso tool.

5. Differentiate between Fill Colour and Gradient tool.

6. What do you understand by Grayscale image?

7. What should you do to scale or resize an image proportionally?

8. What does the feathering value feature do?

Higher-order questions:

- 1. Your school has partnered with an organization that is selecting a few students from each class to volunteer for the summer. To participate, you have to submit your CV. Which tool do you think would help you create a professional-looking CV? Why did you select this tool?
- 2. What could be the potential consequences of using a website that does not give authentic results? Why do you think it is important to verify the authenticity of information found on the web?

Algorithmic Thinking



Worksheet 4

Multiple choice questions:

1. What is a problem?
 - a. A task to be performed
 - b. An object
 - c. A module
 - d. A task that has been addressed
2. What distinguishes complex from simple problems?
 - a. Complex problems take into account multiple factors
 - b. Complex problems don't require algorithm
 - c. Complex problems require only computational thinking
 - d. None of the above
3. Which of the following is NOT a part of the algorithmic thinking process?
 - a. Logically organizing data
 - b. Running the program
 - c. Automating solutions via algorithmic thinking
4. Which of the following is NOT the property of an algorithm?
 - a. It must be correct or precise
 - b. It is a step-by-step guided solution
 - c. It must terminate
 - d. None of the above
5. Which of the following describes conditional statements?
 - a. They are used to end the algorithm.
 - b. They are used to make choices and support decision making.
 - c. They are used to repeat a set of instructions.
 - d. All of them
6. What does <> operator represent?
 - a. Equals to
 - b. Greater than

- c. Not equal to
- d. Less than

Fill in the blanks:

1. The outcome of an algorithm is called _____.
2. Observing regular trends and finding solutions to common problems is called _____.
3. _____ involves removing unnecessary data to simplify a problem.
4. AND, _____ and NOT are all examples of _____ that allow for more precise decision making.
5. _____, Selection, and _____ are three building blocks of an algorithm.
6. Repetition allows an algorithm to repeat a step until a _____ is met.
7. Computers work by first identifying the _____ and then finding a solution using an algorithm.

Short questions:

1. Define conditional statements.
2. Fill in the table below by writing the correct definitions of the following terminologies.

Terminology	Definition
Algorithm	
Abstraction	
Pattern recognition	

3. What will be the output of the following code if the input is 'Julia'?

```

INPUT Name
IF name= Julia
PRINT "Access Given"
ELSE
PRINT "Unknown Person"

```

Answer: _____

4. State three differences between complex and simple problems.
5. What is Decomposition?
6. Illustrate the diagram showing the concept of the algorithm.

Higher-order questions:

1. A school principal hired a programmer to design a program to grade students. The programmer makes use of the concepts of computational thinking. Write an algorithm to grade students and also briefly talk about the concepts of computational thinking your program uses.
2. A scientist is carrying out an experiment to calculate the velocity of balls falling from varying heights. The experiment continues until the scientist inputs the word STOP. Give justification for the loop you used (if any) and the programming constructs that you think must be used.

Scratch: An Introduction to Computer Programming



Worksheet 5

Multiple Choice Questions

- Which of the following defines programming language:
 - An algorithm
 - Set of instructions
 - A sequence of instructions
 - All of them.
- _____ is the language in the form of 0s and 1s and is understood by the computer.
 - Machine language
 - Assembly language
 - High-level language
 - All of them
- Which of the following computer language is used for interactive web development?
 - C++
 - C
 - Visual Basic
 - None of them
- Which of the following block allow to compare variables and do calculations with numbers?
 - Operators
 - Motion block
 - Variable blocks
 - Both a and c
- The area where the result of the execution of code can be seen is called:
 - Canvas
 - Stage area
 - Sprite info area
 - Sprite

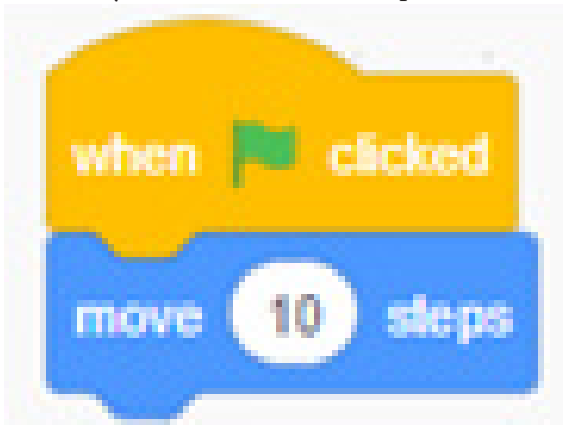
6. A new Sprite can be drawn using which of the following tools in Scratch?
- Costume
 - Paintbrush
 - Paint editor
 - All of them
7. Scratch allows you to record and add customized sounds
- True
 - False

Fill in the blanks:

- _____ tab in scratch allows to edit costumes of sprites.
- Sprite appears on _____.
- The computer language best known for artificial intelligence and machine learning is called: _____.
- Scratch users are also called: _____.
- Computer programming languages are classified as _____ and _____.
- SQL stands for _____.

Short answers:

- State any two key differences between algorithms and programming languages.
- What is the stage area used for?
- What do you think will be the output of the following code?



What will happen if you change the value from 10 to 12?

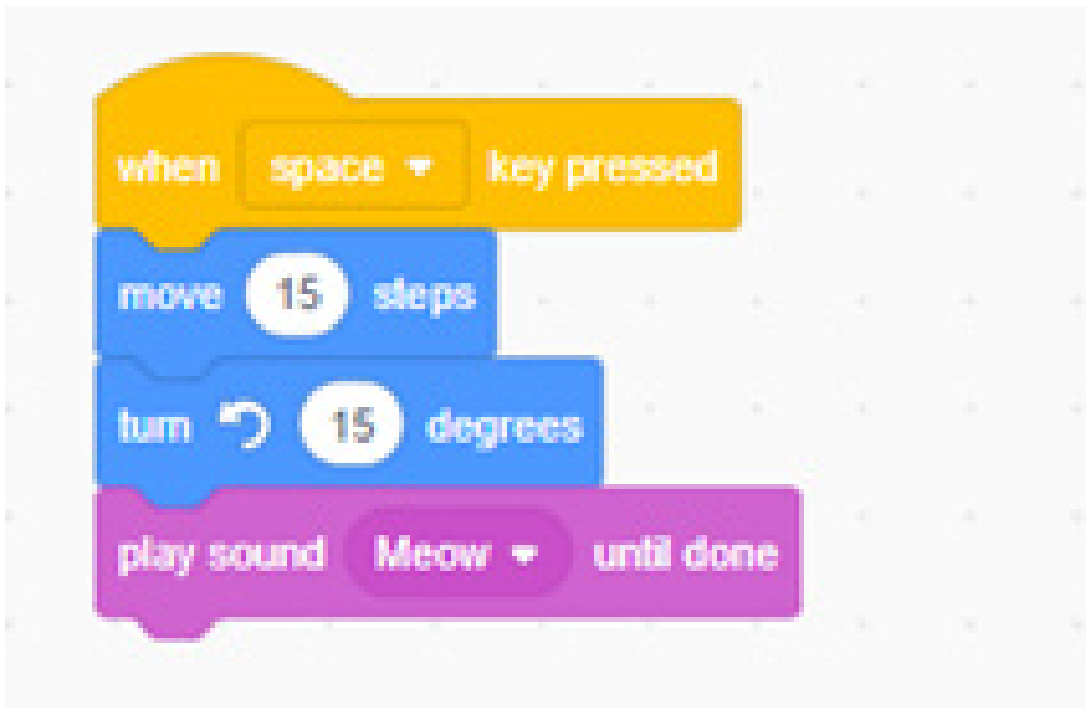
What will happen if you remove the first instruction? Will the program run? Justify your answer.

4. Complete the table below:

Block name	Description
Looks block	
	It gives you options to wait, use loop statements, and conditional statement
Sound block	
	My blocks allow you to create new blocks for a sprite
Events	

5. Study the code below and answer the following questions:

- What command is used to trigger the code?
- The command identified can be found in which block palette category?
- What does the Move command do?
- How many times do you think this code will run?



Higher-order questions:

- You have learnt that algorithms are used at the design phase and programming is used at the implementation phase. Why do you think writing algorithms is helpful? Can we directly proceed with writing programs? Would it be a viable approach? Share your views.

Basic Programming Constructs with Scratch Worksheet



Worksheet 6

Multiple Choice Questions

1. Which of the following is not a programming construct?
 - a. Sound block
 - b. Sequence
 - c. Events
 - d. Variables
2. _____ in programming language trigger some action to happen
 - a. Loops
 - b. Events
 - c. Sequence
 - d. All of them
3. Which of the following constructs support decision making in programming?
 - a. Events
 - b. Loops
 - c. Sequence
 - d. None of them
4. What will the code snippet: say Hello for 2 seconds do?
 - a. Greet the user
 - b. Will say hello for the amount of time specified
 - c. Do nothing
 - d. Both a and b
5. A set of programming blocks that make actions happen one after the other are called:
 - a. Events
 - b. Loops
 - c. Sequence
 - d. Conditional

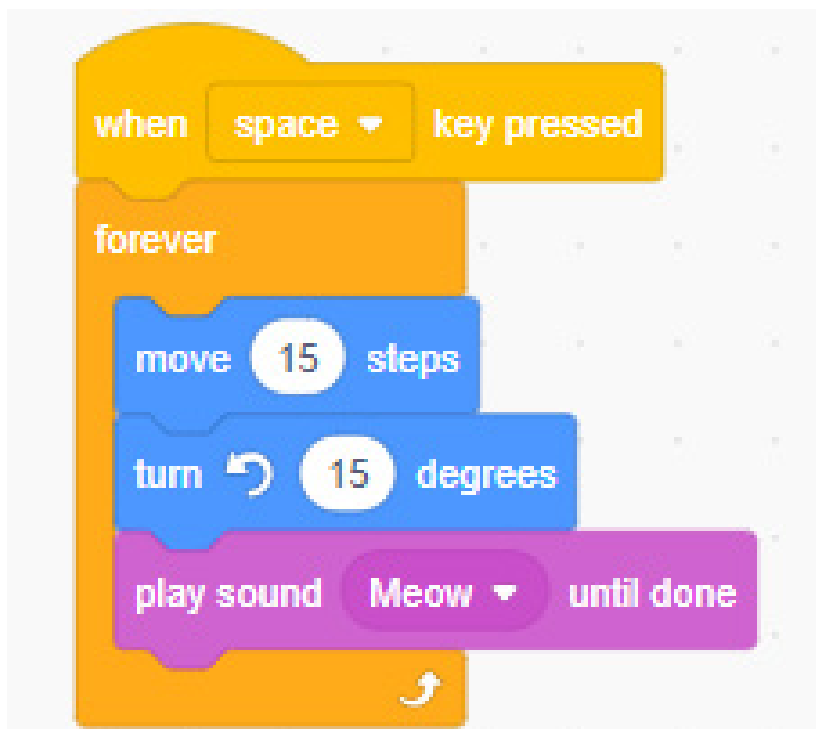
6. If a certain condition is not met, which block can be added to redirect the program to the alternative condition?
- Events
 - If Else
 - IF
 - Any of them

Fill in the blanks:

- The conditional statements control the flow of the program by checking if the condition is _____ or _____.
- In programming language, _____ allows a way to store user-defined data.
- The built-in variable in scratch is _____.
- The code blocks in scratch, that have a notch on the top and bump on the bottom are called _____.

Short questions:

- Define loops.
- Enlist any two advantages of using variables.
- Write the structure of an If-Else statement.
- Look at the piece of code below; what do you think the Forever block does?



Digital Citizenship



Worksheet 7

Multiple Choice Questions

- DM stands for:
 - Direct message
 - Digital message
 - Digital media
 - All of them
- The trail of data created when using the internet is called:
 - Digital trail
 - Virtual footprint
 - Digital footprint
 - Both b and c
- Which of the following is associated with the law that governs the protection of the work of authors, artists, and composers from being used without permission?
 - Plagiarism
 - Piracy
 - Phishing
 - Copyright
- The unauthorized access to one's personal information and using it without consent is called:
 - Misinformation
 - Online scams
 - Privacy invasion
 - Both a and c
- Which of the following gives the users a chance to try the software before buying it?
 - Freeware
 - Shareware
 - Pirated software
 - None of the above

6. RSI stands for:
- Repetitive strain injury
 - Wrist strain injury
 - Repetitive sensitive injury
 - All of them
7. Which of the following is a good example of a strong password
- 1234
 - 123A@4!
 - 123
 - 4321

Fill in the blanks:

- Staying safe online when using the internet is called _____.
- The appropriate age for signing up on social media is _____ years.
- Standards of conduct related to the use of computers are called _____.
- EULA stands for _____.
- An example of free software is _____.
- Using someone's else work without giving due credit is called _____.

Short questions:

- What is digital literacy?
- Highlight any 3 key differences between free software and open source software?
- Define the following terms:
 - Online predators
 - Online scam
 - Cyberbullying
- What is the symbol for copyright?
- What do you understand by Identity Theft?

Higher-order thinking questions:

- Aly has to submit a report on Global Warming and its Effects in the coming week. He asked his father to review it. After reviewing, his father told him that the report is 30% plagiarized. What do you understand by this? Suggest any one way that Aly can use to counter this.
- You have studied ICT rules in the lesson. Your ICT teacher must have also set certain rules. Why do you think these rules are important? Is there any specific rule that you would like to add or amend?

Digital Entrepreneurship



Worksheet 8

Multiple Choice Questions

- Starting a new business refers to:
 - Enterprise
 - Startup
 - Entrepreneurship
 - Both b and c
- A business related to clothing, restaurants, and convenience is called as
 - Retail business
 - Manufacturing and production
 - Healthcare
 - Service-based business
- A flower shop is best categorized as
 - Small-scale business
 - Scalable entrepreneurship
 - Social entrepreneurship
 - All of the above
- Your friend owns a YouTube channel. He creates tutorial/explainer videos on baking. How would you categorize their business?
 - Small-scale business
 - Retail business
 - Digital business
 - Both a and c
- Selling products online using any website is called:
 - E-commerce
 - Retail business
 - Health and safety
 - All of them

6. Using surveys and interviews to gather information about the problem is called:
- Planning
 - Idea generation
 - Growth
 - Opportunity evaluation

Fill in the blanks:

- A business initiated with the intent of expanding operations after a certain period is called: _____.
- Creating a business on the internet is called _____.
- EdTech stands for _____.
- The ability to develop, organize and run a startup is called _____.
- Coaching and consulting are examples of _____.
- Daraz is an example of _____.

Short questions:

- Illustrate the relationship between enterprise, entrepreneur, and entrepreneurship.
- Given an example of a product and service.
- Illustrate the process of entrepreneurship.
- Complete the table below:

	Market reach		Speed of scaling		Flexibility
Traditional		High overhead such as rent utilities	Takes longer to scale	Rely on intuition and experience to make business decisions	
Digital	Global audience through the Internet				Have the flexibility to work from anywhere and anytime

Higher-order:

Study the Alibaba case study below and answer the following questions:

Since Alibaba's inception in 1999, the e-commerce platform has experienced great growth. It has expanded its ecosystem over the years to accommodate technological innovations and has created new sectors of online businesses, leading to an overall revolution in China's retail sector.

The gates of Alibaba had opened at an opportune time. The winds had changed. A revolution was just around the corner. Customers had started liking the idea of online shopping for services and goods by the start of the 21st century which led to a major change in the shopping patterns.

The story of Alibaba is one of a vision fulfilled by a common man - Jack Ma, a former school teacher, who brought a major change in the way we buy goods and services. Founded in the year 1999, Alibaba kick-started a small apartment in Hangzhou, China.

Trust was a crucial issue faced by China due to the lack of an effective means of dispute resolution, especially when e-commerce customers were prone to fraud in the form of product/quality offered, transactional fraud, and delivery delays.

Alibaba managed to drill down the issue of financial security for its buyers and sellers. As a means to facilitate secure transactions, it incorporated an escrow into its online payment system 'Alipay' — which provided a unified platform and solved concerns regarding transactions. Alipay would hold the money until the buyers received their products.

Alibaba's accurate credit model helped build a trustworthy relationship between the two parties. All sellers are requested to pass an online test to verify their identity and prove legitimacy. This helped buyers choose more reliable sellers for their transactions, giving them the space to negotiate and trade. In addition, the system built encouraged online feedback for sellers. Buyer reviews were rewarded with discounts and offers which helped in improving the selection and purchase experience of customers drastically.

Questions:

1. Who founded Alibaba?
2. Highlight the problem statement or the issue that led to the opportunity to create a business.
3. What kind of business category does Alibaba fall in?
4. How did Alibaba address the problem being faced?
5. What do you think the owner did differently to capture the attention of its customers?
6. What was the opportunity that the business owner identified?