INTRODUCTION TO AI AND ITS APPLICATIONS

Observation & Mapping Skills

1. **Draw a simple map showing your journey from home to school with arrows showing direction. Include the landmarks you see on the way.**

   Landmark Checklist:

   - My home
   - My school
   - Shop
   - Park
   - Mosque
   - Traffic light
   - Street names

2. **Match the AI Feature with What It Does**

Traffic Prediction	Shows buildings and roads from above
Satellite View	Finds the fastest route using traffic data
Restaurant Suggestion	Recommends places based on ratings and popularity

A Spot The Bias

Read each situation and choose all the reasons that could explain the bias. More than one answer may be correct.

3. **Your map application always shows the same 3 restaurants, even though there are 10 nearby. Why might this happen?**
    a. The app is broken.
    b. The other restaurants are not in the app's data.
    c. The 3 restaurants paid to be shown more often.
    d. The app learned from people who only visited those 3.

4. **The app gives great directions in the city but gets confused in your village. Why might this happen?**
    a. Villages don't have roads.
    b. The app didn't learn enough about villages.
    c. Most of the training data was done using city maps.
    d. The app doesn't like villages.

5. **The app only shows fast food places, even though you like traditional food. Why might this happen?**
    a. Traditional food is not tasty.
    b. The app learned from people who rated fast food more.
    c. Fast food places advertise more.
    d. The app forgot about traditional food.

6. **Your favourite park doesn't show up on the map. Why might this happen?**
    a. The park is invisible.   b. The park wasn't added to the map.
    c. The app didn't learn about that area. d. The app doesn't like parks.

7. **The map application always sends people past a big shopping mall, even when there's a shorter route. What kind of bias is this?**
    a. Data error bias   b. Commercial bias
    c. Speed bias   d. Location bias

8. **The app shows only English-named restaurants in a multi-language city. What kind of bias is this?**

    a. Food bias

    b. Language preference

    c. Data representation bias

    d. Map error

9. **The app gives better walking directions in cities than in rural areas. Why might this happen?**

    a. People in rural areas don't walk.

    b. The app was trained mostly on city data.

    c. Rural areas are not important.

    d. The app is too old.

10. **The app suggests only expensive restaurants. What could be the reason?**

    a. Cheap restaurants are not real.

    b. Expensive places have more online reviews.

    c. The app learned from people who visit expensive places.

    d. The app doesn't know how to find cheap places.

Sorting Data

1. **Toggle is trying to group things correctly. Can you help? Sort the items below into the right categories. The first is done for you.**

Items	Fruits	Vehicles	Animals
Red Apple	✓		
Tomato			
Golden Retriever			
Wolf			
Sports Car			
Toy Car			
Cartoon Dog			
Green Apple			

Predict Like a Robot

2. **Toggle has seen lots of examples. Based on what it knows, what do you think it would guess if it saw:**

   • A red round fruit with a stem?

- A small car with no engine?

- A dog with big cartoon eyes and no fur?

Think and Reflect

3. Think about how AI is used in the apps you know.

- Name the application that guesses what is in a photo?

- Why is it helpful for AI to learn from both right and wrong examples?

- How does this help apps like:

    a. Google Lens

    b. TikTok filters

    c. YouTube recommendations

4. **Match the AI task with the app it might be used in: Instagram, TikTok, YouTube, or Google Lens.**

AI Task	Application
Suggesting videos based on what you like	
Identifying a plant from a photo	
Adding filters to your face in a video	
Showing similar images in search	

INTRODUCTION TO AI AND ITS APPLICATIONS

Everyday AI

Read each situation. Choose the most important ethical rule the AI should follow:

Respect People - Protect Privacy - Keep People Safe - Learn from Mistakes

1. **Your smart speaker starts playing music loudly during your online class.**

2. **An app keeps showing you ads for things you've already bought.**

3. **A fitness tracker shares your location with others without asking.**

4. **A robot vacuum keeps bumping into your cat and scaring it.**

5. **An AI chatbot ignores your question and keeps repeating the same answer.**

6. **Which AI ethical rule do you think is most important?**

7. **What could go wrong if the AI doesn't follow it?**

Think Deeper

Think about fairness, safety, and how AI should behave. The first one is done for you.

8. **An AI grades your math quiz. You and your friend both get the same answers right, but your friend gets a lower score.**

   • **What's the problem?**

   The AI is unfair because it gave different grades for the same answer.

   Here is a sample.

   • **Which AI code of ethics is being broken?**

   Fairness / Respect People

   • **How could the AI be improved?**

   Train the AI with more examples of different ways to say the same thing.

9. **A photo app adds filters that work better on some faces than others.**

   • What's the problem?

   • Which AI code of ethics is being broken?

   • How could the AI be improved?

10. **A game recommends only one type of character to play, even though there are many options.**

   • What's the problem?

   • Which AI code of ethics is being broken?

- How could the AI be improved?

[   ]

[   ]

11. **The school's snack-picking robot always suggests chips and soda, even when students want fruits or sandwiches.**

- What's the problem?

[   ]

[   ]

- Which AI code of ethics is being broken?

[   ]

[   ]

- How could the AI be improved?

[   ]

[   ]

Pattern Detectives

Look at the patterns in the AI's behaviour. Spot and explain what is going wrong. The first one is done for you.

12. **You search for healthy lunch ideas. The AI shows only fast food ads.**

- What pattern do you notice?

    SearchBot shows unhealthy snacks even when asked for healthy ones.

- What rule is being ignored?

    Learn from Mistakes

- How could the AI learn from this?

    Update the AI to better understand what 'healthy' means and adjust the results.

13. **You watch a funny video. Now your social media feed is only filled with jokes, even though you also like science.**

    • What pattern do you notice?

    • What rule is being ignored?

    • How could the AI learn from this?

14. **You use a translator app, but it changes the meaning of your sentences.**

    • What pattern do you notice?

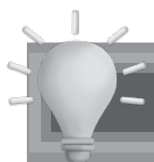   • What rule is being ignored?

    • How could the AI learn from this?

15. **An AI gives you quiz answers but doesn't explain them.**

    • What pattern do you notice?

    • What rule is being ignored?

    • How could the AI learn from this?

Design Challenge

Read each situation. Then write an If–Then rule that would help the AI behave ethically and responsibly. The first one is done for you.

16. A chatbot keeps interrupting people during a group discussion.

If someone is speaking in a group project,

then the chatbot should wait until they Finish before giving suggestions.

17. A music app keeps playing loud songs even after you choose quiet music.

If

then

18. A photo filter app works better on some faces than others.

If

then

19. An AI helper gives answers without checking if they are correct.

If

then

A Problem Solving with Context

1. **Read each problem and choose the best AI helper from the word bank. Then say how it helps:**

   - Acts like a person would
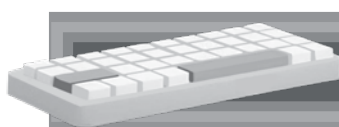   - Helping solve something tricky or big

   Driverless Vehicle - Video Search (like YouTube) - Healthcare AI Assistant - Voice Assistant - Book Recommendation System

Problem	AI Helper	How it Helps
You want to know the weather in Dubai, but your hands are occupied.	voice assistant	Acts like a person
A librarian wants to suggest new books that students might love.		
You need to quickly find videos about space exploration for a project.		
Your grandmother needs reminders to take her medicine at the right time.		
You're driving, and the car needs to safely stay in its lane.		

2. **Sara asked her voice assistant, 'What's the weather like in Paris?' but it gave her results for Paris, Texas instead of Paris, France.**

    a. What kind of data or feature might the AI have misunderstood?

    b. How could the AI learn to do better next time?

Data Patterns & Predictions

3. **Look at the table below. It shows how much students studied, how many AI quizzes they took, and their final scores.**

Student	Study Hours	AI Quizzes Taken	Final Score (%)
A	2	1	60%
B	4	2	75%
C	6	3	90%
D	.....	4	95%

    a. Can you guess how many hours Student D might have studied?

    b. What pattern do you see between the number of quizzes taken and the final score?

4. An AI robot is learning to sort shapes:

> Triangle, Triangle, Square, Triangle, Triangle, Square,
> Triangle, Triangle, ____

a. What comes next?

b. What rule is the AI using to predict the next shape?

5. Number the Steps of Training an AI Model in the correct order.

_____ Evaluate the model's accuracy

_____ Train the model using data

_____ Select important features (what information the AI should look at)

_____ Test the model with new data

_____ Collect and view the all the information

6. A school uses AI to predict which students might need extra help in math. What kind of features (data points) should the AI look at? Select all that apply:

a. Number of math assignments completed

b. Favourite colour

c. Time spent on homework

d. Number of times late to class

e. Shoe size

Application Based Questions

7. **Design an AI system that helps solve the traffic post-school rush hour. Answer the following:**

   • What is your AI called?

   • What problem does it solve?

   • What kind of data will it use?

   • What patterns will it recognise?

   • How will it make predictions or decisions?

8. **Why is it important to test an AI system before using it in real life? What could go wrong if we skip this step?**