Module 2: Solving problems with AI

Summative assessment

LO: Understand the difference between predictive and generative AI

1.   Do the descriptions below describe **predictive** or **generative** AI systems? Write **predictive** or **generative** in the boxes below.

	Predictive or generative?
Trained on large amounts of data and existing content to create new content like programming code, text, pictures, or sound.	
Trained on large amounts of past data to identify future trends, classify data, or create recommendations.	

LO: Describe the types of problems AI can help solve

2.   Which of the following examples are **predictive AI**, **generative AI**, or **neither**?

	Predictive	Generative	Neither
A social media app that uses advertising to recommend products to you			
A facial recognition system that unlocks your phone			
A large language model (LLM), like ChatGPT or Gemini			
A flood forecasting system			
An application that creates artwork in the style of your chosen artist			
A traffic light system that works on a fixed timer			

LO: Recognise the ethical issues of developing AI applications

3.   When building an AI-powered content moderator for social media, which of these is an ethical issue that the developer should think about? Select **one** option from the table below.

A. Making sure that large volumes of data can be handled quickly	
B. Making sure that damaging content is correctly identified	
C. Making sure the social media company will make as much money as possible	

LO: Describe the stages of the AI project lifecycle

4.   Place the stages of the AI project lifecycle in the correct order. The first two are done for you:

> **A.** Evaluate the model
> **B.** Explain the model
> **C.** Prepare the data
> **D.** Test the model
> **E.** Train the model
> **F.** Define the problem

F, C, …

LO: Describe the stages of the AI project lifecycle

5.   When building a classification model, which of these options is part of the 'prepare the data' stage? Pick **one**.

A. Calculating the accuracy of the model	
B. Data cleaning	
C. Producing a model card	

LO: Use a model card to evaluate a machine learning model

6.   Which **one** of the following best describes the purpose of a model card?

A. Model cards help application developers and users work out whether or not to use a machine learning model in their product.	
B. Model cards describe the technical details of the models that shouldn't be shared with the general public.	

LO: Describe what a 'user-focused' approach to design is

7.　　Which **one** of the following options best describes 'user-focused' design?

A. 'User-focused' design involves creating an AI tool to solve a problem that already exists.	
B. 'User-focused' design means building creative AI technologies and then finding users who the system can help.	
C. 'User-focused' design involves building AI applications that look very attractive to the end user, which will encourage people to use them.	

LO: Describe why a machine learning system is appropriate to solve your problem

8.　　Are the following options true or false?

Machine learning is a suitable way to solve a problem when…

	True / False
… the system produces predictions based on new input data.	
… the system predicts labels by identifying patterns in data, which would take too long for humans to write rules to describe.	
… it must be possible for a human to understand how a system worked out a result. The system must use if−then rules that a human can understand.	

LO: Describe what a confidence threshold is and why they are used

9.　　Which option best describes what a confidence threshold is?

A. Confidence thresholds help machine learning developers decide which predictions to accept: predictions with a confidence score below the threshold are ignored.	
B. A confidence threshold is a value made by the machine learning model based on the average accuracy of the model.	

LO: Demonstrate how the accuracy of an ML model is measured

10.　　If a machine learning model outputs a **confidence score** of 100%, does it mean the prediction is definitely correct?

A. Yes	
B. No	

LO: Demonstrate how the accuracy of an ML model is measured

11.   Is a **confidence score** a measure of **accuracy** in a machine learning model?

A. Yes	
B. No	

LO: Demonstrate how the accuracy of an ML model is measured

12.   A machine learning model is being developed to classify pictures of items for recycling. The results of the testing are below:

Correctly labelled data? (Yes/No)	Confidence score
Yes	81%
Yes	67%
No	16%
Yes	93%
No	30%
Yes	91%
Yes	77%
Yes	90%
No	89%
Yes	70%

$$Accuracy = \frac{?}{Total\ number\ of\ predictions} \times 100$$

Part A: The formula for calculating the accuracy of a model is shown above. Which of the following should replace the question mark?

A. Number of correctly predicted labels	
B. Number of predictions that are correct AND above the threshold	
C. Number of incorrectly predicted labels	

Part B: The confidence threshold is 75%. What is the accuracy of the model? Give your answer as a percentage.

Space for working out:	
Answer:	

LO: Identify information that would help evaluate a machine learning model

13.   You have been asked to consider the accuracy of a model that predicts the spread of wildfires in the area you live in. What do you need to think about?

A. The confidence threshold that has been set by the developer	
B. The technical skills needed to implement the model	
C. The amount of time spent training the model	

LO: Identify information that would help evaluate a machine learning model

14.   Which **two** of the following pieces of information should you include on a model card?

A. The accuracy score of the model	
B. Any known bias in the model	
C. The amount of time spent training the model	
D. The technical skills needed to use the model in an application	