1. Define Artificial Intelligence (AI) and provide examples of its applications.

Ans: Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think and learn like humans. Examples include virtual assistants like Siri and Alexa, recommendation systems like those used by Netflix, and autonomous vehicles.

1. Differentiate between supervised and unsupervised learning techniques in ML.

Ans: Supervised learning involves training a model on a labeled dataset, where each input is associated with a corresponding output. Unsupervised learning, on the other hand, involves training a model on an unlabeled dataset and allowing it to learn patterns and structures on its own.

1. What is Python? Discuss its main features and advantages.

Ans: Python is a high-level programming language known for its simplicity and readability. Its main features include dynamic typing, automatic memory management, and a vast standard library. Its advantages include ease of learning, versatility, and a strong community support.

1. What are the advantages of using Python as a programming language for AI and ML?

Ans: Python's advantages for AI and ML stem from its simplicity, readability, and extensive libraries such as TensorFlow and scikit-learn. It offers ease of prototyping, scalability, and interoperability with other languages and tools.

1. Discuss the importance of indentation in Python code.

Ans: Indentation is crucial in Python as it defines the block of code. Proper indentation helps in visually organizing code and also determines the scope of statements within loops, functions, and conditional statements.

1. Define a variable in Python. Provide examples of valid variable names.

Ans: In Python, a variable is a reserved memory location used to store values. Valid variable names can contain letters, numbers, and underscores, but cannot start with a number. Examples include "age", "name\_1", and "temperature\_reading".

1. Explain the difference between a keyword and an identifier in Python.

Ans: A keyword in Python is a reserved word that has a specific meaning and cannot be used as an identifier (variable name). An identifier, on the other hand, is a name given to entities like classes, functions, variables, etc., created by the user.

8. List the basic data types available in Python.

Ans: Basic data types in Python include integers, floats, strings, booleans, lists, tuples, dictionaries, and sets.

9.Describe the syntax for an if statement in Python.

Ans:if condition:

# code block to execute if condition is True

10. Explain the purpose of the elif statement in Python.

Ans: The elif statement in Python is used to check for additional conditions after the initial if statement. It allows for branching logic where multiple conditions can be evaluated sequentially, executing the block of code associated with the first condition that is true.

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