

Assignment Answer

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

Answer. Artificial intelligence (AI) is the theory and development of computer systems capable of performing tasks that historically required human intelligence, such as recognizing speech, making decisions, and identifying patterns. AI is an umbrella term that encompasses a wide variety of technologies, including machine learning, deep learning, and natural language processing (NLP).

Although the term is commonly used to describe a range of different technologies in use today, many disagree on whether these actually constitute artificial intelligence.

Powerful Examples Of AI Applications In Today's World :

Automated customer support.

Personalized shopping experience.

Healthcare.

Finance.

Smart cars and drones.

Travel and navigation.

Social media.

Smart home devices.

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

Answer. Supervised learning involves training a model on labeled data, where each input is associated with a corresponding output. Unsupervised learning involves training a model on unlabeled data, where the model learns patterns and structures without explicit guidance.

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

Answer. Python is a computer programming language often used to build websites and software, automate tasks, and analyze data. Python is a general-purpose language, not specialized for any specific problems, and used to create various programmes.

Key Features of Python Programming

Portable Language

It is a cross-platform language

Standard Library

High-Level Language

Easy to learn and use

Dynamic Language

Extensible Language

Interpreted Language

Object-Oriented Programming Language.

In terms of application areas, prefer Python for the following modules:

Data Analysis.

Data Visualizations.

Machine Learning.

Deep Learning.

Image processing.

Computer Vision.

Natural Language Processing (NLP)

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

Answer.

Simplicity and readability are the key reasons coders use Python for AI and Machine Learning. Python is designed to be easy to understand and write. It helps developers concentrate on the problem-solving aspects of AI and ML.

Python allows you to run the script on GPU that can be comparatively faster than CPU. Enterprises generally prefer GPUs because most AI applications require parallel processing of multiple calculations, for example, neural networks accelerated AI, and deep learning operations with massive parallel inputs of data.

Libraries. Another advantage of Python for AI and ML is the diversity of Python standard libraries that cover a lot of ground, reducing the need to code everything from scratch.

Libraries such as NumPy, Pandas, Tensorflow, Pytorch and Matplotlib take care of the numerical aspects and data visualization, while SciPy brings in additional scientific computing capabilities.

Interoperability is another advantage of Python. It leads to easy communication with other languages like C and C++, enabling it to leverage optimized code pieces for computationally intensive tasks. This results in a better performance. Moreover, Python's extensive community support ensures that developers can quickly find solutions and get help when needed.

5.Discuss the importance of indentation in Python code.

Answer : Indentation in Python is crucial for defining the structure and scope of code blocks. It determines which statements belong to which block of code, such as loops, functions, or conditional statements.

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

Answer.

Technically, the variable acts as an address for where the data is stored in memory. A Python variable may be assigned a value of one type and then later re-assigned a value of a different type.

Examples of valid variable names:

hello_world

b4_you leave

num1

temp

_x_y

list_em

user12

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

Answer:

A keyword refers to a predefined word that python reserves for working programs that have a specific meaning, You can't use a keyword anywhere else. Python Identifiers are the different values that a programmer can use to define various variables, integers, functions, and classes.

8. List the basic data types available in Python.

Answer:

Basic data types in Python include integers, floating-point numbers, strings, booleans, lists, tuples, dictionaries, and sets.

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

Ans: The syntax for an if statement in Python is:

```
if condition:
```

```
    # code block to execute if condition is true
```

if: This keyword starts the if statement.

condition: This is an expression that evaluates to either True or False. If the condition is True, the code block following the if statement is executed.

A colon (:) marks the end of the if statement's condition and the beginning of the indented code block.

Indented code block: This block contains the code that is executed if the condition is true. It can consist of one or more statements. The indentation level determines which statements are part of this block.

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

Answer:

Elif' stands for 'else if' and is used in Python programming to test multiple conditions. It is written following an if statement in Python to check an alternative condition if the first condition is false. The code block under the elif statement will be executed only if its condition is true.