

1) Define Artificial Intelligence (AI) & provide example

* Artificial Intelligence or AI is the field of computer science that focuses on creating intelligent machines.

* These machines are designed to perform tasks that would typically require human intelligence, such as problem-solving, learning & decision making.

* AI technology has applications in various areas like voice assistants, self-driving cars & even social media algorithms.

Examples of its Applications:

1) Virtual Assistants:

All powers voice-activated assistants like Siri, Alexa, Google Assistants help us with tasks, answer queries & provide information.

2) Autonomous Vehicles:

AI enables self-driving cars to perceive their surroundings, make decisions & navigate safely on the road.

3) Health Care:

AI is used in medical imaging to assist in the diagnosis of diseases, drug discovery & personalized medicine.

4) Gaming:

AI is used to create intelligent virtual opponents in games to improve game graphics & physics simulations.

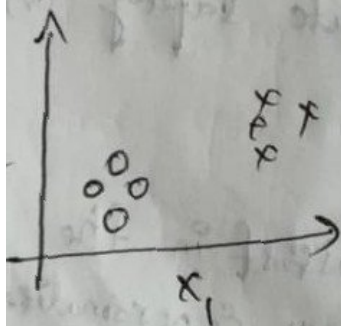
2) Differentiate between supervised and unsupervised learning techniques in ML

Supervised

- * Input data is labelled
- * Uses training dataset
- * Data is classified based on training dataset
- * Used for prediction

* Divided into two types Regression & classification

* Known number of classes



* Use offline analysis of data

unsupervised

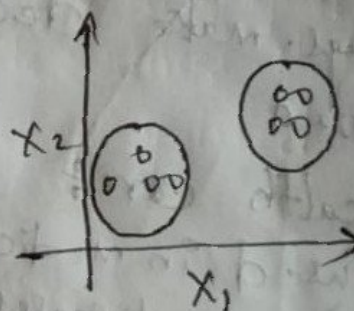
- * Input data is unlabelled
- * Uses just input dataset

- * Uses properties of given data to classify it
- * Used for

Analysis

* Divided into two types clustering & Association

* Unknown number of classes



* Use real time analysis of data

3) What is Python? Discuss its main features & advantages.

At Python is a programming language that is super popular for its simplicity & versatility. It's used for web development, data analytics, AI/ML, etc.

1. Easy to Read & Write

python has a clean & simple syntax, making it easy to understand & write code

2. Versatile & powerful: python can be used for various purpose like web development, data analysis, scientific computing machine learning & more

3. Large standard library:

python comes with a vast standard library that provides ready to use modules for different tasks saving you time & effort

4. Cross-platform Compatibility:

python programs can run on different operating systems like windows, macOS, linux without any modification

5. Integration Capabilities:

python can easily integrate with other languages like C, C++ & java allowing you to leverage existing code & libraries

Q. What are the advantages of using python as a programming language for AI & ML?

Ans python is widely used in the field of AI & ML for several reasons

1. Extensive libraries:

python offers a rich ecosystem of libraries such as tensorflow, pytorch & scikit-learn, which provide powerful tools & pre-built functions for AI & ML tasks.

2. Easy to Read & write: python's clean & readable syntax allows developers to express AI & ML concepts in a straightforward manner. This makes it easier to prototype, experiment & collaborate on projects.

3. Large Community & Support:

python has a vibrant community of developers who actively contribute to AI & ML projects. This means you can find ample resources, tutorials & forums to seek help & stay updated with the latest advancements.

4. Integration Capabilities:

python seamlessly integrates with other languages like C & C++ allowing you to combine the efficiency of low languages with the simplicity & flexibility of python.

5. Data Handling & Visualization

python provides excellent libraries like pandas, matplotlib for data manipulation, analysis & visualization. These tools enable efficient data preprocessing & Exploration, essential steps in AI & ML workflows.

⑤ Discuss the importance of indentation in python code.

Indentation code plays a crucial role in python code. By visually representing the code's structure, indentation makes it easier for developers to understand flow & logic of the program.

1. **Readability:** Indentation enhances the readability of python code. By visually representing the code's structure, indentation makes it easier for developers to understand flow & logic of the program.

2) **Code blocks:** In python code blocks are defined by their indentation level. Indentation determines which lines of code belong to a specific block.

3) **Consistency:** python enforces consistent indentation as part of its syntax. By requiring a consistent indentation style, python promotes code readability across different projects & teams.

6) Debugging:

Indentation errors can lead to syntax errors or logical bugs in python code. By paying attention to proper indentation, you can catch & resolve these errors easily making the debugging process smoother.

6) Define variable in python, provide ex of valid variable names.

Variables used to store data values we should not use keywords we should not use special characters.

city-name = 'mumbai'

Variable Assigning

x = 5

y = "hey vee"

z = 3.14

print(z)

print(x)

print(y)

3.14

5

hey vee

1) Explain the difference between a keyword and identifier in python.

Keywords

Keywords are reserved words with special meaning

Keywords do not have syntax

Specifies the type/kind of entity

Keywords are not further classified

Identifiers

Identifier is a unique name given to the class function away from

Identifiers can have syntax

Identify the name of a particular entity

Identifiers are classified into 'external name' as 'internal name'

2) List the basic data types available in python.

Datatypes:

Integer (Int):

Represents whole numbers.

Ex: 5, -10.

Float:

Represents decimal numbers.

Ex: 3.14, -2.5, 0.0

both +ve & -ve for

String(str):

Represents a sequence of character enclosed in single quotes (') or double quotes (").

Boolean(bool):

Represents either True or False. This data type is useful for logical operations & conditional statements.

list:

Represents an ordered collection of elements enclosed in square brackets ([]).

Ex: [1, 2, 3], ['apple', 'banana', 'cherry']

Q) Describe the syntax for an if statement in python.

A: Executes one block of code if a condition is true & another block if false.

if condition:

1) The keyword 'if' is followed by a condition which is an expression that evaluates to either True or False.

2) After the condition, there is a colon (:) to indicate the start of the code block that will be executed if the condition is True.


```

Ent: X=22
if X > 50
    print("X is greater than 50")
else:
    print("X is not greater than 50")
O/p: X is not greater than 50

```

10) Explain the purpose of the elif statement in python.

The 'elif' statement in python stands for 'else if'. It is used when you want to check multiple conditions in a sequence.

Syntax:

```

if Condition 1:
    # code block to be executed if condition
    is true
    statement 1
    statement 2

```

```

elif condition 2:
    # code block to be executed if condition
    is false & condition 2 is true
    statement 3
    statement 4

```

```

else
    # code block to be executed if all conditions
    are false
    statement 5
    statement 6

```


* The 'elif' statement allows you to check additional conditions after the initial 'if' statement

* If the first condition is false it moves on to the next 'elif' statement & checks its conditions

* If that condition is true the corresponding code block is executed

* This process continues until either a condition is true or there are no more 'elif' statements. If none of the conditions are true, the code block within the 'else' statement is executed.

* Using 'elif' allows you to handle multiple scenarios & perform different actions based on the specific condition that evaluates to true.