

Assignment - 1

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

* 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 requires 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 Assistant

AI powers voice-activated assistants like Siri, Alexa, & Google Assistant help us with tasks, answer questions, & 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

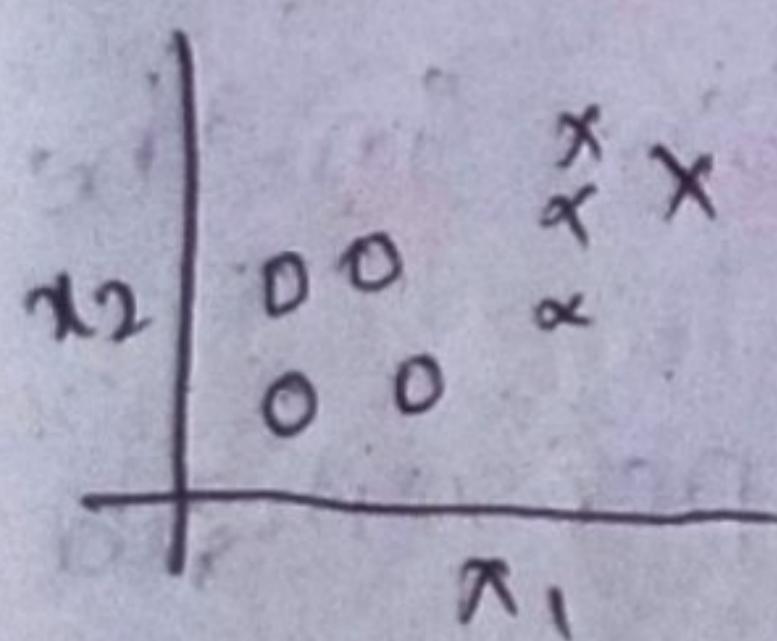
simulations.

5. Smart home Devices:-

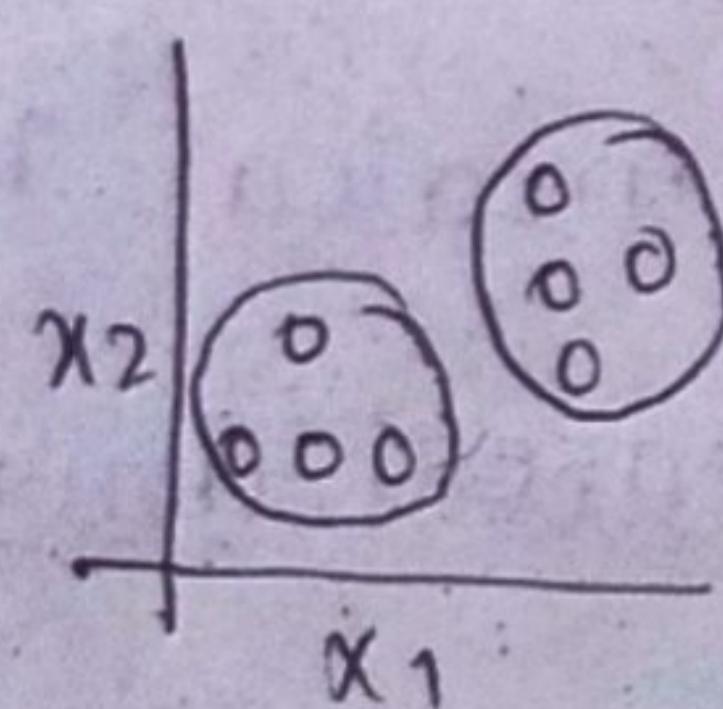
- * Powers devices like smart speakers, thermometers, Stats, & security systems making our home more efficient & responsive.

② Differentiate between Supervised & Unsupervised learning techniques in ML.

Supervised	unsupervised
* Input data is labelled	* Input data is unlabelled
* uses training dataset	* uses just input dataset.
* Data is classified based on training dataset	* uses properties of given data to classify it.
* used for prediction	* used for analysis
* Divided into two types classification & Regression	* Divided into two types clustering & association.
* known number of classes	* unknown number of classes



- * Use offline analysis of data.



- * Use real time analysis of data.

③ what is python? Discuss its main features & advantages.

python is a programming language that's super popular too its simplicity & versatility, it's used for web development data analysis, all & more.

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 modifications.

5. Integration capabilities:

Python can easily integrate with other languages like C, C++, & Java allowing you to average existing code & libraries.

(4) what are the advantages of using python as a programming language for AI & ML?

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 straight-forward 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-level languages with the simplicity of Python.

6. Data Handling & visualization:-

(python seamlessly integrates with other languages like C, C++ (allow))

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 plays a crucial role in python code, in python, indentation is used to define the structure & hierarchy of code blocks, such as loops, conditions & functions

$x=10$

if $x==10$:

Print ('x is equal to 10')

Output: x is equal to 10

2. 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.

a. 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 uniformity & readability across different projects & teams.

4. 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 early, making the debugging process smoother.

⑥ Define variable in Python provide ex of valid variable names.

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

city-name = 'Warangal'

Variable Assigning

x = 5

y = "Hey vec"

z = 3.14

print(z)

print(x)

print(y)

3.14

Hey vec

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

Keywords	Identifiers
Keywords are reserved words with special meaning.	Identifiers is a unique name given to the class function array & so-on.
Keywords do not have symbols.	Identifiers can have symbols.
Specify the type kind of entity.	Identify the name of a particular entity.

- ⑧ List the basic datatypes available in python

Datatypes:

Integer (int):

Represents whole numbers, both positive & negative
ex:- 5, -10, 0....

Float:-

Represents decimal Numbers

ex:- 3.14, -2.5, 10.18

String (str):-

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

`Boolean (bool):`

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

List :-

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

e.g. [1, 2, 3], ['apple', 'banana', 'cherry']

⑨ Describe the syntax for an if statement in Python

executes one block of code if a condition is true & another block if it is 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.

3. The code block is intended & contains one or more statements that will be executed if the condition is True.

```
if x=22  
  if x > 50  
    print("x is greater than 50")  
  else:  
    print("x is not greater than 50")  
print("x is not greater than 50")
```

⑩ Explain the purpose of the elif statement in python.

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

if condition 1:

code block to be executed if condition 1 is true

statement 1

Statement 2

.....

elif condition 2:

code block to be executed if condition 1 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 condition.
- * 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 & pt perform different actions based on the specific condition that evaluates to True.