

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

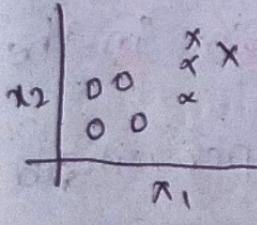
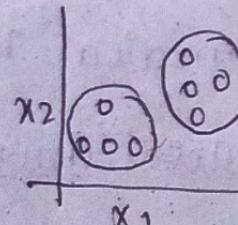
Simulations.

Q. Smart home devices:-

AI

Powers devices like smart speakers, thermos, 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 & flexibility of Python.

6. Data Handling & visualization:-

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

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

7. 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 not use special characters.

city-name = 'warangal'

variable Assigning

x=5

y = "Hey rec"

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 whose 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.

```
else x=22  
if x > 50  
print ("x is greater than 50")  
else print("x is not greater than 50")  
Output 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 & perform different actions based on the specific condition that evaluates to true.