Assessment

1) Define Artifical intelligence (AI) and provide examples of its applications.

Artificial Intelligence (AI) refers to the simulation of human intelligence in machines, enabling them to perform tasks that typically require human intelligence, such as visual perception, speech recognition, decision making and language translation.

Examples of its applications:-

1. Virtual Assistants:- Siri, Alexa, and google Assistant are virtual assistants that use AI to understand and respond to user queries.

2. Computer vision:- AI enables machine to interpret and understand visual informatio used in facial recognition, object detection and autonomous vehicles.

⇒ Same like we have many examples of its Applications they are:

⇒ Recommendation systems
⇒ Natural Language processing
⇒ Medical Diagonosis
⇒ Autonomus vehicles
⇒ financial trading

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

supervised learning:-

⇒ In supervised learning, the model is trained on labled data, where each traing example is paired with an input and a corresponding output.

⇒ The goal is to learn a mapping from inputs to outputs

⇒ Examples: image classification, spam detection and predicting housing prices.

unsupervised learning:-

⇒ In unsupervised learning, the model is trained on unlabeled data, where only the input data is provided without corresponding output labels

⇒ The goal is to find patterns or structure in the data without explicit guidance

⇒ examples: customer segmentation, Anomaly detection, and topic modeling.

3) what is python? Discuss its main features and advantages.

Python is a high-level, interpreted programming language known for its simplicity and readability.

→ Its main features include:

1. Readability
2. versatility
3. large standard library
4. Dynamic typing
5. Interpret Nature
6. Cross-platform.

→ Advantages of python include:

1. Productivity
2. community support
3. scalability
4. Integration capabilities
5. Extensive ecosystems.

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4) what are the advantages of using python as a programming language for AI and ML.

→ python is widely regarded as the goto programming language for AI and ML.

1. A great library ecosystem
2. Ease of use
3. Flexibility
4. Integration capabilities
5. Scalability
6. Growing popularity
7. Readability.

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12) Discuss the importance of indentation in python code.

Indentation in python is crucial for maintaining code readability and structure. It's not just for aesthetics; python uses identation to define the scope of code blocks, such as loops, conditionals, and function definitions. proper identation ensures that code is organized and easy to understand, which is especially important when collaborating with others or revisiting your own code later. without correct identations, python code can be ambigious and prone to errors, as the interpreter relies on it to determine the structure of the code.

6) Define a variable in python. Provide examples of valid variable names

In python, you can define a variable by assigning a value to it using the equals sign (=). Variable names can consist of letters, numbers, and underscores, but must start with a letter or underscore. They cannot start with a number or contain spaces.

Ex:- x = 10

Here are examples of valid variable names:

```
name = "John"
age = 25
my_variable = 10
myvar = 5
```

Here are examples of invalid variable names:

```
2nd_place = "error"
my variable = 100
$money = 50
```

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

i) keywords are the words that have special meaning and purpose and you can't use this keywords in variable and function.

Eg:- if, else, for, while...

ii) Identifiers are names given to variables and function.

Eg:- tuple=5

tuple=8.

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8) list the basic data types available in python.

i) numeric
- integer
- float
- complex

ii) sequence
- string
- tuple
- lists

iii) mapping
- dictionary

iv) boolean

v) sets.

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

```
if condition:
    #Indented block of code to execute if
        condition is true.
elif another_condition:
    #Indented block of code to execute
        if another_condition is true.
else:
    #code block to execute if none of
        the above conditions are true
```

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

The 'elif' statement in python stands for "else if". It allows you to check additional conditions if the initial 'if' statement evaluates to false.

```
eg:- age = 18
if (age < 18):
    print ('age is less than 18')
elif (age == 18):
    print ('Age is equal to 18')
else:
    print ("Age is greater than 18")
```