

1. Define artificial intelligence (AI) & provide examples of its applications?

Artificial intelligence refers to the simulation of human intelligence in machines that are programmed to think and act like humans, performing tasks that typically require human intelligence such as visual perception, speech recognition, decision-making and language translation. The goal of AI is to create systems that can learn from data, adapt to new inputs, and perform tasks autonomously, aiming to mimic cognitive functions associated with human minds.

Examples of its application :-

1. virtual personal assistance
2. Recommendation systems
3. Autonomous vehicles
4. health care
5. finance
6. gaming
7. robotics
8. cybersecurity.

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

Supervised learning	unsupervised learning
<ul style="list-style-type: none"><li>→ Supervised learning algorithms are trained using labelled data</li><li>→ Supervised learning model takes direct feedback to check if it is predicting correct output or not</li><li>→ Supervised learning model predicts the output</li><li>→ Supervised learning model predicts an accurate result</li></ul>	<ul style="list-style-type: none"><li>→ unsupervised learning algorithms are trained using unlabelled data</li><li>→ unsupervised learning models does not take any feedback.</li><li>→ unsupervised learning model finds the hidden patterns in data</li><li>→ unsupervised learning may give less accurate result as compared to supervised learning</li></ul>

3. what is python? discuss its main features and advantages.

python is a versatile and widely-used programming language known for its simplicity and readability. Python supports multiple programming paradigms, including procedural, object-oriented, and functional programming.

main key features of python:-

1. clear syntax
2. interpreted
3. dynamic typing
4. extensive libraries

Advantages:-

1. simple and readable syntax
2. wide range of applications
3. large standard library
4. community and ecosystem
5. cross-platform compatibility
6. Integration capabilities
7. support for multiple programming paradigms

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

python has become one of the most popular programming languages for AI and ML due to several key advantages.

1. Ease of learning and use
2. Rich Ecosystem of libraries
3. community support
4. versatility
5. Scalability
6. Integration with other languages
7. support for research and prototyping

5. Discuss the importance of indentation in python code.

indentation plays a critical role in python code due to its significance in defining the structure and logic of the program.

- The proper indentation enhances code readability.
  - Indentation is used to delimit blocks of code such as those within loops, conditionals (if-else statements), function definitions and classes.
  - Enforcement of coding standards.
  - Indentation can lead to syntax errors or alter incorrect the program's logic.
  - Code clarity and maintenance.
  - Most Python integrated development environments and code editors automatically handle indentation, making it effortless for developers to maintain proper formatting.
6. Define a variable in python. Provide examples of valid variable names.

\* Variable is a container that is used to store data values. In variable names we should not use keywords and special characters.

\* The variable does not start with numerical or special characters except underscore

Ex:-  
myname = "reshma" (or)  
myname = "reshma"

7. Explain the difference b/w a keyword and an identifier in python.

**Keyword:** - Keywords are reserved words that have predefined meaning in the Python language.  
→ These words cannot be used as identifiers (variable names, function names, etc.). because they are part of the language syntax.

Ex i- 'if', 'else', 'for', 'while' etc.

identifier :-

- \* An identifier is a name given to entities like variables, functions, classes etc. in python.
- \* identifiers are user-defined and should follow certain rules such as:-
  - i. they must start with letter (a-z,A-Z) or an underscore.
  - ii. The rest of the identifiers can contain letters/digits/underscore.
  - They cannot be a keyword.

Ex:- myname, myName etc.

8. List the basic data types available in python.

1) Numeric datatypes

such as int, float, complex.

2) boolean

3) string

4) list

5) tuple

6) sets

9. describe the syntax for an 'if' statement in python.

If condition:

# code block to execute if condition is true

- ii) The if statement starts with 'if' keyword followed by a condition that evaluates to either 'true' or false. If the condition is true the code block will be executed and if the condition is false then the block is terminated.

10. explain the purpose of the else-if statement in python.

The purpose of else-if is to add additional condition to an 'if' statement. That means if the 'if' condition is true the 'if' block is executed otherwise it will

check the "elseif" condition and if it is true the block of code will be executed otherwise else its terminate the elseif block and execute other code.