

سوالات:

- 1-What is the difference between a compiled and an interpreted programming language? Give examples.
- 2-What is an algorithm and what is its purpose? Give an example of a simple algorithm.
- 3-What is a data structure? Name a few common data structures.
- 4-What is the difference between a variable and a constant?
- 5-What is the difference between a class and an object?
- 6-What is OOP and what are its advantages?
- 7-What is encapsulation?
- 8-What is inheritance?
- 9-What is polymorphism?
- 10-What is an exception and how is it handled?

پاسخنامه:

- 1-Compiled languages (like C++) are translated entirely into machine code before execution, while interpreted languages (like Python) are interpreted line by line during runtime. This difference affects execution speed, portability, and debugging.
- 2-An algorithm is a set of well-defined instructions to solve a problem. Algorithms are used in all aspects of programming. For example, the binary search algorithm is used to find an element in a sorted array.

3-A data structure is a way of organizing and storing data in a computer. Common examples include arrays, linked lists, trees, graphs, and hash tables.

4-A variable is a value that can change during program execution, while a constant is a value that remains fixed throughout the program.

5-A class is a blueprint for creating objects, while an object is an instance of a class.

6- OOP stands for Object-Oriented Programming and is a programming paradigm based on objects and classes. OOP promotes code reusability, maintainability, and flexibility.

7-ncapsulation is the process of hiding the implementation details of a class and exposing only its interface.

8- Inheritance is the process of creating a new class (child class) based on an existing class (parent class). The child class inherits all the properties and methods of the parent class.

9-Polymorphism is the ability of a variable or function to take on many forms.

10-An exception is an event that disrupts the normal flow of a program. Exceptions are handled using try-catch blocks.