



(Q-1) What do you understand by software in computer science and how can you categorize the software.

Ans:- In computer science, software refers to a collection of programs, data and instructions that enable a computer system to perform specific tasks or functions. It is a set of logical instructions written in a programming language that is executed by a computer to accomplish a particular goal.

Software can be categorized into several types based on different criteria. Here are some ways to categorize software:

1. System software: This type of software is designed to provide essential functions and services to the computer system and its users. It includes operating systems.

2. Application software: Application software refers to programs that are developed to perform specific tasks or solve particular problems for end-users.



(Q.2) List five features of Python that make it user friendly.

Ans Python is widely regarded as - a user friendly programming language due to several features :-

1. Easy to Learn : Python has a simple and intuitive syntax, making it easy for beginners to understand and start coding.
2. Readable code : Python emphasizes code readability with clean and organized syntax that is easy to follow and maintain.
3. Large standard Library : Python comes with a wide range of built-in functions and modules, saving user time by providing ready-made solutions for common tasks.
4. Versatile and flexible : Python can be used for various purposes, including web development, data analysis, artificial intelligence, and more. It adapts well to different domains and allows users to accomplish diverse tasks.

Roll.no.: 0108AI221002
Name - Abhishek Srivastava

5. Cross-Platform Compatibility: Python runs on multiple platforms such as Windows, macOS, Linux, ensuring the code can be easily executed on different operating systems without major modifications.



Q.3) List the various numerical data type in python with examples.

Ans In python, there are several numerical data types that are commonly used for working with numbers.

1. Integer (int) : Integer are whole numbers without any decimal points. They can be positive or negative.

Example : $x = 20$
 $y = -10$

2. Floating Point (float) : Floating-point numbers represent real numbers with decimal points. They can also be positive or negative.

Example : $x = 3.14$
 $y = -2.23$

3. Complex (complex) : Complex number consist of a real part and an imaginary part, represented by "j", or "J".

Example : $z = 3 + 2j$

name:- Abhishek Shrivastava
enroll no.= 0108AT221002

4. Boolean (bool): Booleans represent the truth values True and False. They are often used in logical operation and control flow.

Example :- 1: `if num > 5:` print "num is greater than 5"

`is - true = True`

`is - false = False`

Q. `num = 5 > 4`



Samrat Ashok Technological Institute
Vidisha (M.P.)

Enroll.no.: 0108AT221002
Name: Abhishek Shrivastava
Sch. No.: 32738
Year: 1st year 2nd sem
Date: 01/06/23

(Q.4) Write the output for following expression is evaluated using a python interpreter.
Write error if you think the given expression will cause an error.

(i) print(18%6)

Output: 0

(ii) if 12+5*9 == 153:
 print("true")

else:

 print("false")

Output: false

(iii) print("ITC" + 101)

Output: Error

TypeError: Can only concatenate str(not "int") to str.

(iv) num = 5>4
 print(num)

Output: True



Samrat Ashok Technological Institute

Vidisha (M.P.)

Q.S. (i) Let's `nums1` and `nums2` be two non-empty lists. Write a Python command that will append the last element of `nums2` to the end of `nums1`.

Ans :- `nums1.append(nums2[-1])`

(ii) List is mutable and tuple is immutable. justify the statement with example.

Ans The statement "List is mutable and tuple is immutable." is justified by the fact that list can be modified (elements can be added, removed, or changed) after creation, while tuples cannot be modified once created. Here's an example to illustrate the difference.

~~Example with list (mutable)~~

`my_list = [1, 2, 3]`

`print(my_list)` # output: [1, 2, 3]

`my_list.append(4)`

`print(my_list)` # output: [1, 2, 3, 4]

`my_list[1] = 5`

`print(my_list)` # output: [1, 5, 3, 4]

`my_list.remove(3)`

`print(my_list)` # output: [1, 5, 4]

Enroll no - 010 BAT 221002
Name : Abhishek Shrivastava

Example with tuple (immutable)

my_tuple = (1, 2, 3)

print(my_tuple) ## Output: (1, 2, 3)

my_tuple += (4,)

print(my_tuple) ## Output: (1, 2, 3, 4)

my_tuple[1] = 5

It will raise a type error.

my_tuple.remove(3)

It will raise an attribute error.

In the example with a list can see that elements are added using 'append()', modified by directly assigning a new value on index and removed using 'remove()'. This list mutable, allowing these operations.

In contrast, in the ex. with a tuple, we cannot modify the tuple directly. However we can create a new tuple by concatenating the original tuple with another tuple.

Modify or remove elements in a tuple will result in errors ('TypeError' and 'AttributeError', respectively).

This is mutability of list and immutability of tuples in python.