
Assignment -1

Q.1 Why do we call Python as a general purpose and high-level programming language?

Ans. General purpose programming language because it is designed to be used for writing software in the widest variety of application domains. A general purpose language has this status because it does not include language constructs to be used within a specific application domain.

High level programming language because the amount of abstraction, it is very abstract and uses natural processing elements, which make its easier to use and understand. It makes whole process simpler and more automated than low level language.

Q.2 Why is Python called a dynamically typed language?

Ans. Python is a dynamically typed language because it doesn't know about the type of the variable until the code is run. It means it store the value at some memory location and then binds that variable name to that memory container and makes the contents of the container accessible through that variable name. So the data type doesn't matter as it will get to know the type of the value at the run-time.

Q.3 List some pros and cons of Python programming language?

Pros of Python:

- Simple and Easy

- Extensive libraries

- Portable – Python is portable, which means it can be run on any other platform. Here you need to write code only once and you can run it anywhere.

- Highly scalable

- Large community

- Flexible and extensible

Cons of Python:

- Issues with design

- Slower than compiled languages

- Python's memory consumption and garbage connection – Python language comes with high memory usage and high memory consumption. It uses reference counting in its garbage collection which often leads to potential memory losses.

- Python is dynamically typed

Multithreading in Python – The multithreading in python is not true multithreading due to its global interpreter lock (GIL). The multithreading model in python doesn't have threads that run at same time. Here, one thread can hold the GIL at one time, which clearly implies that this is not exactly multithreading.

Q.4 In what all domains can we use Python?

Ans. Python is used in many application domains

Web Development

Data Analysis and Visualization

Machine Learning and AI

Scientific Computation – Packages like pandas and numpy used for this purpose

Desktop GUI Applications

Software Development

Q.5 What are variable and how can we declare them?

Ans. Variable is the name given to the specific memory location. Python has no command for declaring a variable. Declaring in python is very simple.

Just name the variable

Assign the required value to it

The data type of the variable will be automatically determined from the value assigned, we don't have need to define it explicitly.

Ex- Declare int variable

```
a=5
```

Q.6 How can we take an input from the user in Python?

Ans. In python we can take input from user by using input() function.

Q.7 What is the default datatype of the value that has been taken as an input using input() function?

Ans. String datatype is the default datatype for the value that has taken by using input() function.

Q.8 What is type casting?

Ans. Type casting is a method to convert the variable data type into certain data type in order to the operation required to be performed by users. There are two type of type casting in python-

1) Implicit type casting- In this method python converts data type into another data type automatically.

Example- Python automatic converts b to float

```
b = 8.5 (Implicit type casting)
```

2) Explicit type casting- In this method, python needs user involvement to convert the variable data type into certain data type to the operation required.

Example- Type casting int to float

```
a=5(int variable)
```

```
b = float(a)(explicit type casting)
```

Q.9 Can we take more than one input from the user using single input() function? If yes, how? If no, why?

Ans. Yes we can take more than one input from the user using single input() function in python by using two methods – 1) using split() 2) Using list comprehension

1) Using split() method – This function helps in getting multiple inputs from users. It breaks the given input by the specified separator. If a separator is not provided then any white space is a separator. Generally users use a split() method to split python string but one can use it in taking multiple inputs.

Example- Taking multiple inputs at a time

```
a,b,c = input("Enter values ").split()
```

taking multiple inputs at a time and type casting using list() function

```
x = list(map(int,input("Enter multiple values").split()))
```

2) Using list comprehension –List comprehension is an elegant way to define and create list in Python. It also used in getting multiple inputs from users.

Example-

```
x = [int(x) for x in input("Enter value").split()]
```

Q.10 What are keywords?

Ans. Python has a set of keywords that are reserved words that cannot be used as variable names, function names or any other identifiers.

Example:

And, or, elif, except, lambda, except, return, global, yield, while, try etc.

Q.11 Can we use keywords as a variable? Support your answer with reason.

Ans. We cannot use a keyword as a variable name, function name or any other identifier. They are used to define the syntax and the structure of the python language. In python, keywords are the case sensitive.

Q.12 What is indentation? What's the use of indentation in Python?

Ans. Indentation refers to the spaces at the beginning of a code line. Python uses indentation to indicate the block of code.

Python indentation is the way to telling the interpreter that the group of statements belongs to a particular block of code. A block is the combination of all these statements. Most programming language like C, C++, JAVA uses braces {} and Python uses indentation to define the block of code.

Q.13 How can we throw some output in Python?

Ans. Using print()

Q.14 What are operators in Python?

Ans. Operators are used to perform operation on variables and values. Python divides the operators in the following groups-

-Arithmetic Operators

-Assignment Operators

-Comparison Operators

-Logical Operators

-Identity Operator

-Membership Operators

-Bitwise Operators

Q.15 What is difference between / and // operators?

Ans. / --> Floating point division

// ---> Floor division sometimes also called int division

Example: 4/2 ----- 2.0(ans)

5//3 ---- 1(ans)

Q.16 Write a code that gives following as an output.

...

iNeuroniNeuroniNeuroniNeuron

...

Ans. print("""

print("iNeuroniNeuroniNeuroniNeuron")

print("""

Q.17 Write a code to take a number as an input from the user and check if the number is odd or even.

Ans.

```
def check(n):  
    if n % 2 == 0:  
        print("Even")  
    else:  
        print("Odd")  
  
n = int(input("Enter the number"))  
check(n)
```

Q.18 What are boolean operator?

Ans. Boolean operators are those that result in Boolean values of True and False. These include and, or and not. While and & or required two operands, not is a unary operator. Boolean operators are most commonly used in arithmetic computations and logical comparasion.

Q.19 What will the output of the following?

...

1 or 0

0 and 0

True and False and True

1 or 0 or 0

...

Ans. 1 or 0 => 1

0 and 0 => 0

True and False and True => False

1 or 0 or 0 => 1

Q.20 What are conditional statements in Python?

Ans. Conditional statements are useful when we execute a specific code based on a condition. It also helps in decision making in python, preferably when we prefer to execute a piece of code only if certain conditionals are met.

Q.21 What is use of 'if', 'elif' and 'else' keywords?

Ans. IF – It executes the conditional block only when the statement is true.

```
If(Something is True)
```

```
// executes the block
```

ELIF – Useful when we try to put up one more check in case the “if” conditional statement fails.

ELSE – The else keyword catches anything which isn’t caught by the preceding conditions.

Q.22 Write a code to take the age of person as an input and if age >= 18 display "I can vote". If age is < 18 display "I can't vote".

```
def check(age):
    if age >= 18:
        print("I can vote")
    else:
        print("I can't vote")
age = int(input("Enter your age : "))
check(age)
```

Q23. Write a code that displays the sum of all the even numbers from the given list.

...

```
numbers = [12, 75, 150, 180, 145, 525, 50]
```

...

```
ANS. def sum(numbers):  
    s = 0  
    for i in numbers:  
        if i%2 == 0:  
            s += i  
    print(s)  
numbers = [12, 75, 150, 180, 145, 525, 50]  
sum(numbers)
```

Q.24 Write a code to take 3 numbers as an input from the user and display the greatest no as output.

```
def greater(a, b, c):  
    if a > b and a > c:  
        print(a)  
    elif b > a and b > c:  
        print(b)  
    else:  
        print(c)  
a, b, c = map(int, input("Enter three numbers: ").split())  
greater(a, b, c)
```

Q.25 Write a program to display only those numbers from a list that satisfy the following conditions

- The number must be divisible by five

- If the number is greater than 150, then skip it and move to the next number

- If the number is greater than 500, then stop the loop

'''

numbers = [12, 75, 150, 180, 145, 525, 50]

'''

```
Ans: def check(numbers):  
    for i in numbers:  
        if i%5 ==0 and i <= 150:  
            print(i)  
        elif i > 500:  
            break  
  
numbers = [12, 75, 150, 180, 145, 525, 50]  
check(numbers)
```