

Internship Assignment

Name: P. Muskan
Admission No.: 19741

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1. Explain Programming and python in detail

Definition and purpose of Programming

Programming is the process of designing and writing, testing and maintaining instructions (code) that a computers can perform specific task

Purpose of Programming

- * Solve real-world problems logically
- + To Perform tasks automatically
- + To develop applications, Software, websites and systems
- + To process data and make decisions

Example:

A program that calculates student grades automatically instead of manual calculation

What is python:

Python is a highlevel, interpreted, general-purpose programming language created by Guido van Rossum. it focuses on simplicity and readability

Characteristics of Python

- * Easy to learn and use
- * Interpreted language [no compilation needed]
- * Object-oriented and functional
- * Platform independent
- * Large standard library

Applications of Python:

- * Web development
- * Data analysis
- * Automation and scripting
- * Cyber security tools
- * Game development

Types of Comments in Python

1. Single line comment

Ex: # This is a single line comment
 print("Hello")

2. Multi line comment

This is a multiline comment
used for document

....
Importance of Python in modern software development

- * Faster development due to simple syntax
- * Widely used in AI and Data Science
- * Strong community support
- * Listed by companies like Google, Netflix and NASA

2) Describe Data Types and Operators in Python

Built-in Data Types in Python

1. Numeric:-

- * INT
- * Float
- * Complex

2. Sequence:-

- * List
- * tuple
- * String

3. Set :-

Ex: colors = {"red", "blue", "green"}

4. Mapping

- * Dictionary -> key: value pair

Ex:- student = {"name": "Python", "age": "9"}

5. Boolean

True or False

Ex:- is_Pass = True

Python operator

1. Arithmetic operators

- + Addition
- Subtraction
- * Multiplication
- / Division
- % Modulo

2. Assignment operators

- = equal to
- += Addition Equal to
- =
- *=
- /=
- %=

3. Comparison operators

- == equal to
- != is not equal to
- > Greater than
- >= Greater than equal to
- < less than
- <= less than equal to

4. Logical operators

- x and
- x or
- x not

5. Membership operator

- in
- not in

6. Identity operator

- is
- is not

- * Real world usage of operators
 - => Arithmetic -> calculating salary, marks etc
 - => Comparison -> checking eligibility
 - > logical -> login validation
 - > membership -> searching items in a list

3. Python Input and output operations

Input() Function

```
name = input ("Enter name")
```

-> Default data type of input is string

Type Conversion

Ex age = int (input ("Enter age:"))

Taking multiple Inputs:

```
a,b = input ("Enter two numbers:").split()
```

Formatted output

using print

Ex:- print ("Hello", name)

using separator

```
print (10,20,30, sep = ",")
```

using format()

```
print ("Age * is {}", format (age))
```

4. Control statements and Decision making statements

Control statements decide which part of the program runs
and how many times it runs

Types of Control statements

- * Decision making [if, else]
- * Looping (for, while)
- * Jumping (break, continue)

Decision making

1. if statement

```
age = 18  
if age >= 18;  
    Print ("Eligible to vote")
```

2. if - else statement

```
if age >= 18  
    Print ("Eligible")  
else  
    Print ("Not Eligible")
```

3. if - elif - else Statement

```
marks = 85  
if marks >= 90  
    Print ("Grade A")  
elif marks >= 75  
    Print ("Grade O")  
else:  
    Print ("Grade C")
```

5 Write an Essay on python Programming Fundamentals

Programming play an important role in problem solving. it helps us break a big problem into small steps and solve it logically using a computer. By writing programs, tasks such as calculations, data processing and automation can be done easily and accurately.

Python is a popular programming language because of its simple syntax and high readability. Python uses English-like words and does not require complex symbols, which makes it easy for beginners to learn and understand. Programs written in Python are short, clear and easy to maintain.

Comments are used in Python to explain the code. They help programmers understand what the code does and make programs easier to read. Comments are very useful for documentation and

For working in a team python supports single-line and multi-line comments

Python provides different data types such as numbers, strings, list, tuples, sets, dictionaries and logical operations. Input and output using input() and print() functions

Control flow in Python is managed using decision making statements like if, if else, and if..else..else. These statements allow the program to make decisions based on conditions and execute the required blocks of code. Overall, Python's fundamental from a strong base for building efficient and reliable programs.

Real world problems using Python programming

1. Movie Ticket Pricing

A movie theatre charges:

₹ 150 for children (age < 13)

₹ 250 for adults (age - 39)

₹ 200 for seniors (age ≥ 60)

If the person is watching a 3D movie, add ₹ 50 extra.

Write a program that takes ages and is 3D (1 or 0) and prints the final ticket price.

```
age = int(input("Enter your age:"))
```

```
is_3d = int(input("Enter 1 if you want to watch 3D else 0:"))
```

```
if age <= 13:
```

```
    Price = 150
```

```
elif age < 60
```

```
    Price = 250
```

```
else:
```

```
    Price = 200
```

if $i > 30 = -1$:

Price += 50

Print ("Final Ticket Price : ₹", Price)

2. College Attendance Rule

A student is allowed to write the Exam if :

Attendance ≥ 75 OR attendance ≥ 60 AND Medical Certificate (1=Yes, 0=No)

Take attendance percentage and medical certificates as input and

Print "Allowed" OR "Not Allowed"

```
att = int(input("Enter Attendance Percentage :"))
```

```
med = int(input("Enter 1 if medical certificate is exist else 0 :"))
```

if att ≥ 75 OR (att ≥ 60 and med == 1):

 Print ("Allowed")

else :

 Print ("Not Allowed")

3. E-commerce Discount

A shipping site gives :

20% discount if bill ≥ 5000

10% discount if bill is between 2000 and 4990

No discount if bill < 2000

But if the customer is a prime number, then get Extra 5% discount

Input : bill amount , is prime (1 or 0)

Print final amount to be paid.

```
bill = int(input("Enter the total bill amount :"))
```

```
prime = int(input("if your are prime number Enter 1 else 0 :"))
```

if bill ≥ 5000 :

 if prime == 1:

 Price = bill - (15/100)*bill

 Print (Price)

```

else:
    Price = bill - (20/100)*bill
    Print(Price)

elif bill > 2000 and bill <= 4999:
    if prime == 1:
        Price = bill - (15/100)*bill
        Print(Price)
    else:
        Price = bill - (10/100)*bill
        Print(Price)

else:
    Print(bill)

```

4) Smart phone Battery Warning

A phone shows:

- * 'Low Battery' if battery ≤ 20
- * 'Normal Battery' if battery between 21-80
- * 'Full' if battery > 80

But if phone is charging it should "charging" instead of any message

Input.Battery Percentage, is charging (1 or 0)

Battery = int (input ("Enter the battery of mobile :"))

is_charging = int (input ("Enter 1 if mobile is pluggin to charge else 0;"))

if battery < 0 or battery > 100:

Print ("Invalid battery percentage")

elif is_charging == 1:

Print ("charging")

elif battery $\leq 20\%$:

Print ("Low Battery")

if battery ≥ 21 battery < 80 :

Print ("Normal")

else:

Print ("Fully charge")

5 Driving License check

A person can get a driving license if
age ≥ 18

And passed driving test (1=Yes)

But if age ≥ 60 , driving test is not required

Input : age , test passed

Print. "Eligible" or "Not Eligible"

age = int (input ("Enter age:"))

test = int (input ("Enter test result 1 for revised else 0:"))

if age ≥ 18 and test == 1 and age < 60 OR (age ≥ 60):

Print ("Eligible for driving license")

else:

Print ("Not Eligible")

6 Online Food Delivery

A restaurant gives free delivery if

order amount ≥ 500

OR

User is b gold member

But if the distance is more than 10km delivery is never free

Input : amount is Gold (1 or 0) distance

amount = int (input ("Enter 1 if bill amount:"))

is Gold = int (input ("Enter 1 if your are gold member else 0:"))

distance = int (input ("Enter the distance in km:"))

if distance ≤ 10 and amount ≥ 500 OR is gold = 1 and distance ≤ 10
Print ("Free delivery")
else:
Print ("Delivery charges are applicable")

7. Bank Loan Approval

A bank approves a loan if

Salary $\geq 30,000$ AND credit score ≥ 700

OR

Salary $\geq 50,000$ [credit score ignored]

Input : salary, credit score

Print ("Loan Approved" or "Loan Rejected")

Sal = int (input ("Enter salary:"))

Score = int (input ("Enter credit score:"))

if sal ≥ 30000 AND score ≥ 700 OR sal ≥ 50000

Print ("Loan Approved")

else

Print ("Loan Rejected")

8. Program on Electricity Bill

units = int (input ("Enter number of units consumed:"))

if units $<= 100$:

bill = units * 2

elif units $<= 200$:

bill = 100 * 2 + (units - 100) * 3

else :

bill = 100 * 2 + 100 * 3 + (units - 200) * 5

Print ("Final bill amount: ₹", bill)

Output :

Enter your number of units consumed : 250

Final bill amount : ₹750

9. Program on student scholarship

```
marks = int(input("Enter your marks:"))
```

```
familyinc = int(input("Enter Family income:"))
```

```
issinpar = int(input("Enter 1 if you have single Parent else 0:"))
```

```
if issinpar == 1 and marks >= 85:
```

```
    print("you are eligible for a scholarship")
```

```
elif marks >= 85 and familyinc < 50000:
```

```
    print("you are eligible for a scholarship")
```

```
else:
```

```
    print("you are not eligible for a scholarship")
```

Output :

Enter your marks : 85

Enter Family income : 60000

Enter 1 if you have single Parent else 0 : 1

You are eligible for a scholarship

10. Program on online Exam Result:

```
theory = int(input("Enter your theory marks:"))
```

```
practical = int(input("Enter your practical marks:"))
```

```
total = theory + practical
```

```
if total >= 100 or (theory >= 40 and practical >= 40):
```

```
    print("pass")
```

```
else
```

```
    print("Fail")
```

out put:

Enter your theory marks : 41

Enter your practical marks : 91

Pass

11 program on Hotel Room Pricing

daystayed = int(input("Enter number of days stayed :"))

is weekend = int(input("Enter 1 if any day is a weekend else 0 :"))

num = int(input("Enter number of weekends in daystayed :"))

If is weekend == 0 :

amo = daystayed * 3000

else :

amo = num * 400 + (daystayed - num) * 3000

If daystayed > 3 :

dis = 0.15 * amo

else :

dis = 0

Famo = amo - dis

Print ("Final bill : ", Famo)

out put:

Enter number of days stayed : 4

Enter 1 if any day is a weekend , else 0 : 1

Enter number of weekends in daystayed : 2

final bill : 11900.0

Program on Gaming Level unlock

```
Score = int(input("Enter your game score:"))
ispre = int(input("Enter 1 if you have Premium Pass else 0:"))
usedche = int(input("Enter 1 if you used cheating else 0:"))

if (Score >= 100 or ispre == 1) and usedche == 0:
    Print ("Next level is unlocked")
elif usedche == 1:
    Print ("Access is denied")
else:
    Print ("Next level is locked")
```

Output:

Enter your game score: 50

Enter 1 if you have Premium pass else 0: 0

Enter 1 if you used cheating else 0: 0

Next level is locked

13. Program on Mobile Data usage

```
data used = int(input("Enter data used in GB:"))
```

```
unlimipla = int(input("Enter 1 if you have unlimited plan else 0:"))
```

```
is Roaming = int(input("Enter 1 if roaming is on else 0:"))
```

```
if (data used <= 2 or unlimipla == 1) and is Roaming == 0:
```

```
    Print ("A network gives unlimited data")
```

```
elif is Roaming == 1:
```

```
    Print ("unlimited plan does not work")
```

```
else
```

```
    Print ("Limited data applies")
```

Output:

Enter data used in GB:5

Enter 1 if you have unlimited plan else 0:0

Enter 1 if roaming is on else 0:0

Limited data applies

14. Program on office Entry System

```
idvalid = int(input("Enter 1 if id is valid else 0:"))
```

```
fimpri = int(input("Enter 1 if fingerprint is valid else 0:"))
```

```
FaceScan = int(input("Enter 1 if facescan is valid else 0:"))
```

```
is_holiday = int(input("Enter 1 if holiday else 0:"))
```

```
if idvalid == 1 and (fimpri == 1 or FaceScan == 1):
```

```
    if is_holiday == 1:
```

```
        print("Access denied today is holiday")
```

```
    else:
```

```
        print("Enter into office")
```

```
else:
```

```
    print("Access denied")
```

Output:

Enter 1 if id is valid else 0:1

Enter 1 if finger print is valid else 0:1

Enter 1 if facescan is valid else 0:0

Enter 1 if holiday else 0:0

Enter into office

program on Movie Rating Display

Average = float(input("Enter Rating"))

is edicho = int(input("Enter 1 if it is editor choice else 0:"))

if isedicho == 1:

 Print ("recommended")

elif average >= 8.5:

 Print ("Excellent")

elif average >= 6.0 and average <= 8.4:

 Print ("Good")

else:

 Print ("Average")

Output :

Enter rating : 8.4

Enter 1 if it is editor choice else 0: 0

Good.