

Explain programming and python in detail

Definition and purpose of programming

Programming is the process of creating, writing, testing and maintaining instructions (code) that a computer follows to perform specific tasks.

Purpose of programming.

- \* Solve real-world problems logically
- \* Automate repetitive tasks
- \* Develop software, websites, apps and systems
- \* Process and analyze data efficiently

Example: A program that calculates student grades automatically instead of manual calculation.

What is Python:

Python is a high-level, 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

prime == 1:

discount += 0.05

final = bill - (bill \* discount)

print (final)

#### 4] Battery Warning :-

battery = int (input ())

charging = int (input ())

if charging == 1:

    print ("charging")

elif battery <= 20:

    print ("Low battery")

elif battery <= 80:

    print ("Normal")

else:

    print ("full")

#### 5] Driving License :-

age = int (input ())

test = int (input ())

if age >= 60 or (age >= 18 and test == 1):

    print ("Eligible")

else:

    print ("Not Eligible")

if idk == 1 and (fp == 1 or face == 1):  
print ("Entry Allowed")

Else:

print ("Entry Denied")

## 5] Movie Rating :-

avg = float (input())

editor = int (input())

if editor == 1:

print ("Recommended")

elif avg >= 8.5 :

print ("Excellent")

elif avg >= 6.0 :

print ("Good")

Else :

print ("Average")

12

## Q] Gaming Level unlock :-

```
score = int(input())
premium = int(input())
cheat = int(input())
if cheat == 1:
    print("Access Denied")
elif score >= 100 or premium == 1:
    print("Level Unlocked")
else:
    print("Locked")
```

## Q] mobile data usage:

```
data = float(input())
unlimited = int(input())
roaming = int(input())
if roaming == 1:
    print("Unlimited Data")
else:
    print("Limited Data")
```

## Q] Office Entry:

```
idv = int(input())
fp = int(input())
face = int(input())
holiday = int(input())
if holiday == 1:
    print("Entry Denied")
```

## Student Scholarship :

marks = int (input())

income = int (input())

Single = int (input())

if marks >= 85 and (income < 500000 or Single == 1):

    print ("scholarship Granted")

Else:

    print ("Not Eligible")

## 10] Online Exam Result :-

t = int (input())

P = int (input())

if (t >= 40 and P >= 40) or (t + P >= 100):

    print ("pass")

Else:

    print ("fail")

## 11] Hotel room pricing:-

weekend = int (input())

days = int (input())

rate = 4000 if weekend == 1 else 8000

total = rate \* days

if days > 3:

    total \*= 0.85

print (total)

## 6] Online food delivery :-

```
amt = int(input())
gold = int(input())
List = int(input())
if dist > 10:
    print("Free delivery")
elif amt >= 500 or gold == 1:
    print("Free delivery")
else:
    print("Delivery charged")
```

## 7] Bank Loan :-

```
Salary = int(input())
Credit = int(input())
if (Salary >= 3000 and Credit >= 700) or Salary >= 5000:
    print("Loan Approved")
else:
    print("Loan Rejected")
```

## 8] Electricity Bill :-

```
units = int(input())
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(bill)
```

## Real-world programmes

1 Movie Ticket pricing :

age = int(input())

is 3D = int(input())

if age < 13:

    price = 150

elif age < 60:

    price = 250

else :

    price = 200

if is 3D == 1:

    price += 50

print(price)

2 College Attendance :

att = int(input())

med = int(input())

if att >= 75 or (att >= 60 and med == 1):

    print("Allowed")

else :

    print("Not Allowed")

3 E-commerce Discount :

bill = float(input())

prime = int(input())

if bill >= 5000:

    discount = 0.20

elif bill >= 2000:

    discount = 0.10

else :

    discount = 0

7

on Essay on Python programming Fundamentals.

Programming plays an important role in problem solving it helps us break a big problem into small steps and solve 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 does not require complex symbols, which makes it easy for beginners to learn and understand programs written in Python are short, clean and easy to maintain

Comments are used in Python to explain the code. They help programmers to 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

Control flow in Python is managed using decision-making statements like if, if-else and if-elif-else. These statements help the program make decisions based on conditions and execute the required block of code overall, Python fundamentals form a strong base for building efficient and reliable programs

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 statement

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

Decision Making

1) if statement

age = 18

if age  $\geq 18$ :

print ("Eligible to vote")

2) if..else statement

if age  $\geq 18$

print ("Eligible")

else:

print ("Not Eligible")

3) if..elif..else statement

Marks = 85;

if marks = 90

print ("Grade A")

elif marks = 75 :

print ("Grade B")

else:

print ("Grade C")

### 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" {}, format (age))

## 2. Assignment operators

- = Equal to
- + = plus Equal to
- = subtraction Equal to
- \* = Multiplication Equal to
- / = division Equal to
- % = Modulo Equal to

## 3. Comparison operators

- == is Equal to
- != is not Equal to
- > greater than
- >= greater than Equal to
- < less than
- <= less than Equal to

## 4. logical operators

- and
- or
- not

## 5. Member operators

- in → not in

## 6. Identity operators

- 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.

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

## Applications of python.

- \* web development
- \* Data Science
- \* Automation and Scripting
- \* cyber security tools
- \* Game development

## Types of comments in python

### 1] Single line Comment

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

### 2] Multiline 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
- \* used by companies like Google, Netflix and Alisa