| EX.NO: 01 | OPERATOR, INPUT AND OUTPUT OPERATIONS |
|---|---|
| DATE: | |

**PROGRAM 1:**

Write a program to calculate the area of a triangle using Heron's formula.

(Hint: Heron's formula is given as: area = sqrt(S*(S–a)*(S–b)*(S–c)))

```
a = float(input("Enter length of side a: "))
b = float(input("Enter length of side b: "))
c = float(input("Enter length of side c: "))
S = (a + b + c) / 2
area = ((S * (S - a) * (S - b) * (S - c))**0.5)
print("Area = ",area)
```

**OUTPUT:**

```
Enter length of side a: 12
Enter length of side b: 18
Enter length of side c: 10
Area =  56.568542494923804
```

**PROGRAM 2:**

Write a program to calculate the distance between two points.

```
import math as m
x1 = float(input("Enter 'x1' value: "))
x2 = float(input("Enter 'x2' value: "))
y1 = float(input("Enter 'y1' value: "))
y2 = float(input("Enter 'y2' value: "))
distance = m.sqrt((x2 - x1)**2 + (y2 - y1)**2)
print(f"Distance between two points is {distance:.2f}")
```

**OUTPUT:**

```
Enter 'x1' value: 8
Enter 'x2' value: 3
Enter 'y1' value: 5
Enter 'y2' value: 2
Distance between two points is 5.83
```

**PROGRAM 3:**

Write a program to calculate the area of a circle, rectangle, triangle, and square.

```
import math as m
print("Select the choice of Shape")
print("1.Square")
print("2.Circle")
print("3.Rectangle")
print("4.Triangle")
choice = int(input("Enter the Shape:"))
if choice == 1:
  side = float(input("Enter the side of the Square:"))
  print(f"Area of the Square is {side**2:.2f}")
elif choice == 2:
   radius = float(input("Enter the radius of the circle: "))
   print(f"Area of the Triangle is {m.pi*radius**2:.2f}")
elif choice == 3:
   length = float(input("Enter the length of Rectangle:"))
   width = float(input("Enter the width of the Rectangle:"))
   print(f"Area of the Rectangle is {length*width:.2f}")
elif choice == 4:
   base = float(input("Enter the base of the Triangle:"))
   height = float(input("Enter the height of the Triangle:"))
   print(f"Area of the Triangle is {0.5 * base * height:.2f}")
else:
   print("Enter Valid Choice")
```

**OUTPUT:**

```
Select the choice of Shape
1.Square
2.Circle
3.Rectangle
4.Triangle
Enter the Shape:2
Enter the radius of the circle: 8
Area of the Triangle is 201.06
```

**PROGRAM 4:**

Write a program to print the digit at one's place of a number.

```
num = int(input("Enter a number:"))
print(f"One's Digit of the given number is {num % 10}")
```

**OUTPUT:**

```
Enter a number:81937
One's Digit of the given number is 7
```

**PROGRAM 5:**

Write a program to calculate the total amount of money in the piggy bank, given the coins of ₹10, ₹5, ₹2, and ₹1.

```
print("_PIGGY BANK_")
a = int(input("Enter number of 10 rs coins: "))
b = int(input("Enter number of 5rs coins: "))
c = int(input("Enter number of 2rs coins: "))
d = int(input("Enter number of 1rs coin: "))
tot=(a*10)+(b*5)+(c*2)+(d*1)
print(f"The Total amount of money in the Piggy Bank is {tot}Rs")
```

**OUTPUT:**

```
_PIGGY BANK_
Enter number of 10rs coins: 6
Enter number of 5rs coins: 2
Enter number of 2rs coins: 9
Enter number of 1rs coin: 8
The Total amount of money in the Piggy Bank is 96Rs
```

**PROGRAM 6:**

Write a program to calculate the bill amount for an item given its quantity sold, value, discount, and tax.

```
q = int(input("Enter the Quantity sold:"))
v = float(input("Enter the value of the Product:"))
d = float(input("Enter the discount percentage: "))
t = float(input("Enter the tax percentage: "))
tot = q * v
dis = (d/100)*tot
value_after_d = tot - dis
tax = (t/100)*value_after_d
print(f"Total Bill amount is {value_after_d + tax}")
```

**OUTPUT:**

```
Enter the Quantity sold:2
Enter the value of the Product:295
Enter the discount percentage: 34
Enter the tax percentage: 19
Total Bill amount is 463.38599999999997
```

**PROGRAM 7:**

Write a python program to calculate a household's electricity bill. The user should enter the number of units consumed. The charges are as follows: For the first 100 units: ₹1.50 per unit For the next 100 units (101–200): ₹2.00 per unit For units above 200: ₹3.00 per unit A fixed meter charge of ₹50 is added to the bill. Display the total amount to be paid with a proper bill

format.

```
units_consumed = int(input("Enter the number of units consumed: "))
if units_consumed<0:
  print("Enter units in positive!")
elif units_consumed < 100:
  amount = units_consumed * 1.50
elif 100 >= units_consumed <= 200:
  amount = units_consumed * 2.00
else:
  amount = units_consumed*3.00
fixed_charge = 50
total_bill_amount = amount + fixed_charge

print("\n" + "*"*40)
print("          ELECTRICITY BILL")
print("*"*40)
print(f"Units Consumed : {units_consumed}")
print(f"Energy Charges : ₹{amount:.2f}")
print(f"Fixed Charges  : ₹{fixed_charge:.2f}")
print("*"*40)
print(f"Total Amount Payable : ₹{total_bill_amount:.2f}")
print("*"*40)
```

**OUTPUT:**

```
Enter the number of units consumed: 308

****************************************
          ELECTRICITY BILL
****************************************
Units Consumed : 308
Energy Charges : ₹924.00
Fixed Charges  : ₹50.00
****************************************
Total Amount Payable : ₹974.00
****************************************
```

**PROGRAM 8:**

Develop a Python program that calculates an employee's net salary. Accept input for: (i)Employee name and ID. (ii)Number of hours worked. (iii)Hourly wage. Calculate the gross salary and deduct 10% as tax. Display a proper salary slip with all details.

```
emp_id = int(input("Enter Employee's ID"))
emp_name = input("Enter Employee's name: ")
no_of_hours_worked = float(input("Enter number of hours worked:"))
wage = float(input("Enter hourly wage for the employee"))
sal = no_of_hours_worked * wage
tax = sal * 0.10
gross_sal = sal - tax
print(".....SALARY SLIP.....")
print(f" Employee ID : {emp_id}\n Employee Name : {emp_name}\n No.of hours worked : {no_of_hours_worked}\n Wages per hour : {wage}\n Gross Salary(with 10% Tax) : {gross_sal}")
```

**OUTPUT:**

```
Enter Employee's ID:268
Enter Employee's name: Ram
Enter number of hours worked:8
Enter hourly wage for the employee245
.....SALARY SLIP.....
 Employee ID : 268
 Employee Name : Ram
 No.of hours worked : 8.0
 Wages per hour : 245.0
 Gross Salary(with 10% Tax) : 1764.0
```

**PROGRAM 9:**

Write a Python program to calculate the total cost of movie tickets. Accept: Number of tickets Ticket category (Silver: ₹120, Gold: ₹180, Platinum: ₹250) Add 18% GST to the ticket cost. Display a formatted bill.

```
num_of_tickets = int(input("Enter number of Tickets:"))
tier = int(input("Enter the Tier('1 for Siver' '2 for Gold' '3 for Platinum'):"))
silver = 120
gold = 180
platinum = 250
```

```
if tier == 1:
    ticket_price = silver
    category = "Silver"
elif tier == 2:
    ticket_price = gold
    category = "Gold"
elif tier == 3:
    ticket_price = platinum
    category = "Platinum"
tot_ticket_price = num_of_tickets * ticket_price
gst = tot_ticket_price * 0.18
total = tot_ticket_price + gst
print(".....BILL DETAILS.....")
print(f" Number of Tickets : {num_of_tickets}\n Ticket Tier : {category}\n Total Ticket
Price(with 18% GST) : {total}\n ")
```

**OUTPUT:**

```
Enter number of Tickets:3
Enter the Tier('1 for Siver' '2 for Gold' '3 for Platinum'):3
.....BILL DETAILS.....
 Number of Tickets : 3
 Ticket Tier : Platinum
 Total Ticket Price(with 18% GST) : 885.0
```

**PROGRAM 10:**

Develop a Python program that estimates travel fare based on distance and transport mode. Input: Distance (in km) Mode (Bus: ₹5/km, Train: ₹2/km, Cab: ₹10/km) Calculate and display the total fare and estimated travel time (assuming constant speeds for each mode).

```
dist = float(input("Enter distance Travelled(in km):"))
mode_of_travel = int(input("Enter '1 for Bus' '2 for Train' '3 for Cab:"))
bus = 5 #5rs/km
train = 2 #2rs/km
cab = 10 #10 rs/km
bus_speed = 40
train_speed = 80
cab_speed = 60
if mode_of_travel == 1:
    fare = bus
    time = (dist / bus_speed) * 60

    category = "Bus"
```

```
elif mode_of_travel == 2:
    fare = train
    time = (dist / train_speed) * 60
    category = "Train"
elif mode_of_travel == 3:
    fare = train
    time = (dist / cab_speed) * 60
    category = "Cab"
else:
    print("Invalid")
total_fare = dist * fare
hours = int( time // 60 )
minutes = int(time % 60)
print(".....Transport Details.....")
if hours > 1:
    print(f" Distance Travelled : {dist}\n Mode of Travel : {category}\n Travel time : {hours} hours and {minutes} minutes\n")
else :
    print(f" Distance Travelled : {dist}\n Mode of Travel : {category}\n Travel time : {minutes} minutes\n")
```

**OUTPUT:**

```
Enter distance Travelled(in km):58
Enter '1 for Bus' '2 for Train' '3 for Cab:2
.....Transport Details.....
 Distance Travelled : 58.0
 Mode of Travel : Train
 Travel time : 43 minutes
```

| | **DEPARTMENT OF CSE** | |
|---|---|---|
| Program | 10 | |
| Output | 5 | |
| Viva-Voce | 5 | |
| Total | 20 | |