Assignment-02

November 25, 2024

1 Assignment 2

1.0.1 Question(1):

1) Area of a Rectangle: Write a Python program to calculate the area of a rectangle. Use the formula: = × Take length and width as inputs from the user.

[4]:
```
lenth = float(input("Enter The Length:"))
width = float(input("Enter The Width:"))
print("Area =", lenth*width)
```

```
Enter The Length: 23
Enter The Width: 12

Area = 276.0
```

1.0.2 Question(2):

2) Circumference of a Circle: Write a Python program to calculate the circumference of a circle. Use the formula: = Take the radius r as input from the user.

[5]:
```
radius = float(input("Enter The Value Of Radius:"))

print("       =", 2*3.145*radius)
```

```
Enter The Value Of Radius: 4

       = 25.16
```

1.0.3 Question(3):

3) Simple Interest: Write a Python program to calculate the simple interest. Use the formula: = × × Take Principal, Rate, and Time as inputs from the user.

[8]:
```
Principal = float(input("Enter The Value Of Principal:"))
Rate = float(input("Enter The Value Of Rate:"))
Time = float(input("Enter The Value Of Time:"))

print("Simple Interest = ", Principal*Rate*Time )
```

```
Enter The Value Of Principal: 22
Enter The Value Of Rate: 12
Enter The Value Of Time: 5

Simple Interest =  1320.0
```

1.0.4 Question(4):

4) Speed of an Object: Write a Python program to calculate the speed of an object. Use the formula:

= /

Take Distance and Time as inputs from the user.

[9]:
```
distance = float(input("Enter The Value Of Distance:"))
time = float(input("Enter The Value Of Time:"))

print("Speed =", distance/time)
```

```
Enter The Value Of Distance: 400
Enter The Value Of Time: 12

Speed = 33.333333333333336
```

1.0.5 Question(5):

BMI Calculator: Write a Python program to calculate the Body Mass Index (BMI). Use the formula: BMI = Take Weight (in kilograms) and Height (in meters) as inputs from the user.

[11]:
```
h = float(input("Enter The Value Of Hight(m):"))
w= float(input("Enter The Value Of Weight(kg):"))

print("BMI = ", w/h**2)
```

```
Enter The Value Of Hight(m): 34
Enter The Value Of Weight(kg): 56

BMI =  0.04844290657439446
```

1.0.6 Question(6):

6) Force Using Newton's Second Law: Write a Python program to calculate the force on an object. Use the formula:

Take m (mass in kilograms) and a (acceleration in meters/second²) as inputs from the user.

[13]:
```
m = float(input("Enter The Value Of Mass(kg):"))
a = float(input("Enter The Value Of Acceleration(m/s^2):"))

print("Force(F) = ",m*a)
```

```
Enter The Value Of Mass(kg): 23
Enter The Value Of Acceleration(m/s^2): 12
```

```
Force(F) =  276.0
```

1.0.7 Question(7):

7) Compound Interest: Write a Python program to calculate compound interest. Use the formula: n-t Where: A= total amount P = principal amount r = annual interest rate (decimal) n = number of times interest is compounded per year t = time in years Take P, r, n, and t as inputs from the user.

[14]:
```
p = float(input("Enter The Value Of Principal Amount:"))
r = float(input("Enter The Value Of Annual interest rate:"))
n = float(input("Enter The Value Of n:"))
t = float(input("Enter The Value Of time in years:"))

print("Compound Interest = ", p*(1+(r/n)))
```

```
Enter The Value Of Principal Amount: 4
Enter The Value Of Annual interest rate: 12
Enter The Value Of n: 5
Enter The Value Of time in years: 2
```

```
Compound Interest =  13.6
```

1.0.8 Question(8):

8) Perimeter of a Triangle: Write a Python program to calculate the perimeter of a triangle. Use the formula: = + +

Take a, b, and c (lengths of the three sides) as inputs from the user.

[17]:
```
a = float(input("Enter The Value Of Side(a):"))
b = float(input("Enter The Value Of Side(b):"))
c = float(input("Enter The Value Of Side(c):"))

print("Perimeter = ", a+b+c)
```

```
Enter The Value Of Side(a): 9
Enter The Value Of Side(b): 8
Enter The Value Of Side(c): 7
```

```
Perimeter =  24.0
```

1.0.9 Question(9):

9) Volume of a Sphere: Write a Python program to calculate the volume of a sphere. Use the formula:

Take r (radius) as input from the user.

[18]:
```
r = float(input("Enter The Value Of Radius:"))

print("Volume Of Sphere = ",(4/3)*3.145*r)
```

```
Enter The Value Of Radius: 7

Volume Of Sphere =  29.35333333333333
```

1.0.10 Question(10):

10) Kinetic Energy: Write a Python program to calculate the kinetic energy of an object. Use the formula: = Take m (mass in kilograms) and v (velocity in meters/second) as inputs from the user.

[19]:
```
m = float(input("Enter The Value Of Mass(kg):"))
v = float(input("Enter The Value Of Velocity(m/s):"))

print("K.E = ", (1/2)*m*v**2)
```

```
Enter The Value Of Mass(kg): 23
Enter The Value Of Velocity(m/s): 8

K.E =  736.0
```

1.0.11 Question(11):

11) Quadratic Equation Roots: Write a Python program to find the roots of a quadratic equation. Use the formula: X = Take a, b, and c as inputs from the user.

[22]:
```
a = float(input("Enter The Value Of (a):"))
b = float(input("Enter The Value Of (b):"))
c = float(input("Enter The Value Of (c):"))

print("Quadratic Equation = ", (-b+(b**2 - 4*a*c)**1/2)/2*a,',', (-b-(b**2 -␣
 ↪4*a*c)**1/2)/2*a)
```

```
Enter The Value Of (a): 5
Enter The Value Of (b): 6
Enter The Value Of (c): 7

Quadratic Equation =  -145.0 , 115.0
```

1.0.12 Question(12):

12) Temperature Conversion: Write a Python program to convert a temperature from Celsius to Fahrenheit. Use the formula:

Take C (temperature in Celsius) as input from the user.

[23]:
```
t = float(input("Enter The Value Of Tempretur(C):"))

print("Tempreture(F) = ", (9/5)*c+32)
```

```
Enter The Value Of Tempretur(C): 37

Tempreture(F) =  44.6
```

1.0.13 Question(13):

13) Gravitational Force: Write a Python program to calculate the gravitational force between two objects. Use the formula ∗ = m1, m2 are the masses of the objects r = distance between the centers of the objects Take m1, m2 and r as inputs from the user.

[24]:
```
m1 = float(input("Enter The Value Of Mass(m1):"))
m2 = float(input("Enter The Value Of Mass(m2):"))
r = float(input("Enter The Value Of Radius:"))
G = 6.67*10**-11

print("Gravitational Force = ", G*m1*m2/r**2)
```

```
Enter The Value Of Mass(m1): 90
Enter The Value Of Mass(m2): 80
Enter The Value Of Radius: 20

Gravitational Force =  1.2006e-09
```

1.0.14 Question(14):

14) Volume of a Cylinder: Write a Python program to calculate the volume of a cylinder. Use the formula: = Take radius(r) and height(h) as inputs from the user

[27]:
```
r = float(input("Enter The Value Of Radius:"))
h = float(input("Enter The Value Of Hight:"))

print("Volume of a Cylinder = ", 3.145*r**2*h)
```

```
Enter The Value Of Radius: 8
Enter The Value Of Hight: 90

Volume of a Cylinder =  18115.2
```

1.0.15 Question(15):

15) Pressure: Write a Python program to calculate the pressure exerted by a force on a surface. Use the formula: = P = pressure F = force A = area Take F(force) and A(area) as inputs from the user.

[28]:
```
f = float(input("Enter The Value Of Force:"))
a = float(input("Enter The Value Of Area:"))

print("Pressure = ", f/a)
```

```
Enter The Value Of Force: 12
Enter The Value Of Area: 23

Pressure =  0.5217391304347826
```

1.0.16 Question(16):

16) Electric Power: Write a Python program to calculate the electric power consumed. Use the formula:

where: P = power V = voltage I = current Take V(voltage) and I(current) as inputs from the user.

[29]:
```
v = float(input("Enter The Value Of Voltage:"))
i = float(input("Enter The Value Of Current:"))

print("Electric Power = ", v/i)
```

```
Enter The Value Of Voltage: 27
Enter The Value Of Current: 220

Electric Power =  0.12272727272727273
```

1.0.17 Question(17):

17) Perimeter of a Circle (Circumference): Write a Python program to calculate the perimeter (circumference) of a circle. Use the formula:

Take r (radius) as input from the user.

[31]:
```
r = float(input("Enter The Value Of Radius:"))

print("Perimeter of a Circle (Circumference) = ", 2*3.145*r)
```

```
Enter The Value Of Radius: 50

Perimeter of a Circle (Circumference) =  314.5
```

1.0.18 Question(18):

18) Future Value in Savings: Write a Python program to calculate the future value of an investment. Use the formula: = (1 +) where: o FV= future value o PV= present value o r= annual interest rate (as a decimal) o t= time in years Take PV, r, and t as inputs from the user. pv = float(input("Enter The Present Value:")) r = float(input("Enter The Value Of Radius:")) t= float(input("Enter The Value Of Time in Year:"))

print("Future Value in Savings = ", pv*(t+r))

1.0.19 Question(19):

[ ]:
```
19)        Work Done by a Force:
Write a Python program to calculate the work done by a force. Use the formula:

where: W = work done
f= force d = distance theta = angle between force and direction of movement (in␣
 ↪degrees)
Take f, d, and   as inputs from the user.
```

[37]:
```
import numpy as np
f = float(input("Enter The Value Of Force:"))
d = float(input("Enter The Value Of Distance:"))
th = float(input("Enter The Value Of th:"))

print("Work Done by a Force = ", f*d*np.cos(th))
```

```
Enter The Value Of Force: 8
Enter The Value Of Distance: 78
Enter The Value Of th: 45

Work Done by a Force =  327.80092102226337
```

1.0.20 Question(20):

20) Heat Transfer: Write a Python program to calculate the amount of heat transferred. Use the formula: = (T) where: Q= heat transfer m = mass c = specific heat capacity ΔT Take m, c, T as inputs from the user.

[39]:
```
m = float(input("Enter The Value Of Mass:"))
c = float(input("Enter The Value Of Heat Capacity:"))
dt = float(input("Enter The Value Of DELTA:"))

print("Heat Transfer = ", m*c*dt)
```

```
Enter The Value Of Mass: 45
Enter The Value Of Heat Capacity: 23
Enter The Value Of DELTA: 78

Heat Transfer =  80730.0
```

[40]:
```
print(".....................THE END.....................")
```

```
…THE END…
```

[ ]:
```

```