M.Huzaifa AI-333873 Ass-1

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2 AI-333873

2.0.1 1) Area of a Rectange

[4]:
```
Length=int(input("Enter The Length: "))
Width=int(input("Enter The Width: "))
Area=Length*Width

print(Area)
```

```
Enter The Length: 12
Enter The Width: 45
540
```

2.0.2 2) Circumference of Circle

[7]:
```
r=int(input("Enter the Radius: "))
pie=float(3.14)
Circumference=2*pie*r

print(Circumference)
```

```
Enter the Radius: 25
157.0
```

2.0.3 3) Simple Interest

[12]:
```
Principle=int(input("Enter the Principle Amount: "))
Rate=float(input("Enter the Interest Rate: "))
Time=float(input("Enter the Time Duration"))

Interest=Principle*Rate*Time

print(int(Interest))
```

```
Enter the Principle Amount: 12
Enter the Interest Rate: 45
```

```
Enter the Time Duration1.5
810
```

2.0.4 4) Speed of an Object

[23]:
```
Distance=int(input("Enter The Distance: "))
Time=int(input("Enter the Time: "))

Speed=Distance/Time

print(Speed,"s")
```

```
Enter The Distance: 1
Enter the Time: 2
0.5 s
```

2.0.5 5) BMI Calculator

[10]:
```
Weight=int(input("Enter your weight in kgs: "))
Height=float(input("Enter you height in meters: "))

BMI=Weight/(Height**2)
print(BMI)
```

```
Enter your weight in kgs: 55
Enter you height in meters: 1.6
21.484374999999996
```

2.0.6 6) Force Using Newton's Second Law

[24]:
```
Mass=int(input("Enter the Mass in Kgs: "))
Acceleration=int(input("Enter the Acceleration in m/s"))

Force=Mass/Acceleration

print(Force,"Joules")
```

```
Enter the Mass in Kgs: 50
Enter the Acceleration in m/s20
2.5 Joules
```

2.0.7 7) Compound Interest

[13]:
```
Principal=int(input("Enter the Principal ammount: "))
annual_rate=float(input("Enter the annual interest rate: "))
note=int(input("Enter Number of times in Year: "))
tpr=int(input("Enter the time in years: "))

Value1=1+annual_rate/note
```

```
Value2=note-tpr

Value3=Value1**Value2

Total=Principal*Value3

print(Total)
```

```
Enter the Principal ammount: 2000
Enter the annual interest rate: 6.5
Enter Number of times in Year: 2
Enter the time in years: 6
6.130194801307455
```

2.0.8 8) Perimeter of Triangles

[23]:
```
a=float(input("Enter Value of A: "))
b=float(input("Enter Value of B: "))
c=float(input("Enter Value of C: "))

Perimeter=a+b+c

print(Perimeter,"meters")
```

```
Enter Value of A: 2
Enter Value of B: 5.6
Enter Value of C: 7.5
15.1 meters
```

2.0.9 9) Volume of Sphere

[18]:
```
pie=3.14
radius=float(input("Enter the Radius of Sphere: "))

Volume=4/3*pie*radius**3

print(Volume)
```

```
Enter the Radius of Sphere: 4
267.94666666666666
```

2.0.10 10) Kinetic Energy

[22]:
```
Mass=int(input("Enter the Mass in kgs: "))
Velocity=float(input("Enter the Velocity in m/s: "))

KE=1/2*Mass*Velocity**2
```

```
print(KE,"Joules")
```

```
Enter the Mass in kgs: 20
Enter the Velocity in m/s: 40
16000.0 Joules
```

2.0.11 11) Quadratic Equation Roots

[1]:
```
import math

# Input coefficients a, b, and c
print("Quadratic equation: ax^2 + bx + c = 0")
a = float(input("Enter coefficient a: "))
b = float(input("Enter coefficient b: "))
c = float(input("Enter coefficient c: "))

# Check if it's a quadratic equation
if a == 0:
    print("This is not a quadratic equation (a cannot be 0).")
else:
    # Calculate the discriminant
    discriminant = b**2 - 4*a*c

    # Determine the nature of the roots
    if discriminant > 0:
        root1 = (-b + math.sqrt(discriminant)) / (2 * a)
        root2 = (-b - math.sqrt(discriminant)) / (2 * a)
        print(f"The roots are real and distinct: {root1:.2f} and {root2:.2f}")
    elif discriminant == 0:
        root = -b / (2 * a)
        print(f"The roots are real and equal: {root:.2f}")
    else:
        real_part = -b / (2 * a)
        imaginary_part = math.sqrt(-discriminant) / (2 * a)
        print(f"The roots are complex: {real_part:.2f} + {imaginary_part:.2f}i␣
↪and {real_part:.2f} - {imaginary_part:.2f}i")
```

```
Quadratic equation: ax^2 + bx + c = 0
Enter coefficient a: 2
Enter coefficient b: 5
Enter coefficient c: 4
The roots are complex: -1.25 + 0.66i and -1.25 - 0.66i
```

2.0.12 12) Temperature Conversion

[2]:
```
Cenrigrate=float(input("Enter the Temperature value in C*: "))

Farenheit=(9/5)*Cenrigrate+32

print(Farenheit,"F")
```

```
Enter the Temperature value in C*: 35
95.0 F
```

2.0.13 13) Gravitaional Force

[6]:
```
m1=float(input("Enter First Mass Value: "))
m2=float(input("Enter Second Mass Value: "))
r=float(input("Enter the distance between objects: "))
G=float(9.8)

F=G*(m1*m2/r**2)

print(F,"G/s")
```

```
Enter First Mass Value: 100
Enter Second Mass Value: 500
Enter the distance between objects: 20
1225.0 G/s
```

2.0.14 14) Volume of Cylinder

[8]:
```
pie=3.12
r=float(input("Enter the Radius: "))
h=float(input("Enter the Height: "))

Volume=pie*(r**2)*h

print(Volume,"mm")
```

```
Enter the Radius: 10
Enter the Height: 12
3744.0 mm
```

2.0.15 15) Pressure

[9]:
```
F=float(input("Enter the amount of force applied: "))
A=float(input("Enter the Area: "))

P=F/A

print(P,"Pascals")
```

```
Enter the amount of force applied: 20
Enter the Area: 50
0.4 Pascals
```

2.0.16 16) Electric Power

[12]:
```
V=int(input("Enter the Voltage: "))
I=int(input("Enter the Current: "))

P2=V/I


print(P2,"Watt")
```

```
Enter the Voltage: 20
Enter the Current: 10
2.0 Watt
```

2.0.17 17) Perimeter of a Circle (Circumference)

[13]:
```
pie=3.12
r=float(input("Enter the Radius: "))

P3=2*pie*r

print(P3,"mm")
```

```
Enter the Radius: 50
312.0 mm
```

2.0.18 18) Future Value in Savings

[2]:
```
PV=float(input("Enter the Present Value"))
r=float(input("Enter annual interest rate"))
t=int(input("Enter the times per year"))

FV=PV*(1+r)**t

print(FV,"Pkr")
```

```
Enter the Present Value18000
Enter annual interest rate1.8
```

```
Enter the times per year6
8674025.471999997 Pkr
```

2.0.19 19) Work Done by Force

[10]:
```
import math

f=int(input("Enter the force: "))
d=int(input("Enter the distance: "))
theta=float(input("Enter the angle: "))

WD=int(f*d*math.cos(theta))

print(WD,"Joules")
```

```
Enter the force: 70
Enter the distance: 10
Enter the angle: 45
367 Joules
```

2.0.20 20) Heat Transfer

[12]:
```
m=int(input("Enter the mass: "))
c=int(input("Enter the specific heat capacity: "))
T=float(input("Enter the change in temperature: "))

Q=m*c*T

print(Q,"Joules")
```

```
Enter the mass: 45
Enter the specific heat capacity: 10
Enter the change in temperature: 5
2250.0 Joules
```