

Ex.No.1

TEMPERATURE CONVERSION

Aim:

To write a python program to calculate the temperature conversion. To convert Fahrenheit to Celsius and Celsius to Fahrenheit

Algorithm:

Program:

```
print("\t\t*****MENU*****")
print("1.From Fahrenheit to Celsius")
print("2.From Celsius to Fahrenheit ")
print("3.Exit")
choice = int(input("Enter choice(1/2/3):"))
if (choice == 1):
    F = int(input("what is the Fahrenheit? "))
    C=(F - 32) * 5/9
    print("Celsius is = ",C)
elif (choice == 2):
    C = int(input("what is the Celsius? "))
    F= (C * 9/5) + 32
    print("Fahrenheit is = ",F)
elif (choice == 3):
    exit()
else:
    print("Invalid input")
```

Output:

Result:

Ex.No.2

CHECK THE STUDENT GRADE

Aim:

Write a python program to check our student grade for the given marks

Algorithm:

Program:

```
sub1=int(input("Enter marks of the first subject: "))
sub2=int(input("Enter marks of the second subject: "))
sub3=int(input("Enter marks of the third subject: "))
avg=(sub1+sub2+sub3)/3
if(avg>=80):
    print("Grade: A")
elif(avg>=70 and avg<80):
    print("Grade: B")
elif(avg>=60 and avg<70):
    print("Grade: C")
elif(avg>=40 and avg<60):
    print("Grade: D")
else:
    print("Grade: E")
```

Output:**Result:**

Ex.No.3

AREA OF SHAPES

Aim:

Write a python program to find out and display the area calculation for the given shapes

Algorithm:

Program:

```
def square(length):  
    area_square = length ** 2  
    print ("the area of your square equals %s" % (area_square))  
  
def rectangle(length, width):  
    area = length * width  
    print ("The area of your rectangle equals %s" %(area))  
  
def triangle(height, base):  
    area_triangle = height * base * 0.5  
    print ("the area of your triangle equals %s" % (area_triangle))  
  
def circle(pi,radius):  
    area_circle = pi * (radius ** 2)  
    print (" the area of your circle equals %s" % (area_circle))  
  
print ("\t Area calculator")  
print ("-----")  
def calculation():  
    print (" \t MENU")  
    print ("-----")  
    print ("1.Square, 2.Rectangle, 3.Triangle, 4.Circle 5.Exit")  
    print ("Enter your choice")
```

```

user_shape = int(input())

if user_shape == 1:
    square(length = float(input("please type the length of the square")))

elif user_shape == 2:
    rectangle(length = float(input("please type the length of the rectangle")), width =
float(input("please type the width of the rectangle")))

elif user_shape == 3:
    triangle(height = float(input("please type the height of the triangle")), base =
float(input("please type the base length of the triangle")))

elif user_shape == 4:
    circle(3.14, radius = float(input("please type the radius of the circle")))

elif user_shape == 5:
    exit()

else:
    print ("That's not in the choices!, Try again")

    calculation()

calculation()

choice = input("Would you like to calculate the area of a different shape?(yes/no)")

while choice == "yes":
    print ("-----")
    calculation()

```


Output:

Result:

Ex.No.4

FIBONACCI SERIES

Aim:

Write a python program to display the Fibonacci series for the given times

Algorithm:

Program:

```
n = int(input("Please Enter the Range Number: "))
i = 0
first = 0
second = 1
while(i < n):
    if(i <= 1):
        Next = i
    else:
        Next = first + second
        first = second
        second = Next
    print(Next)
    i = i + 1
```

Output:**Result:**

Ex.No.5

FINDING FACTORIAL

Aim:

To write a python program to find and display the factorial value for the given number

Algorithm:

Program:

```
n=int(input("Enter number:"))
fact=1
while(n>0):
    fact=fact*n
    n=n-1
print("Factorial of the number is: ")
print(fact)
```

Output:

Result:

Ex.No.6 **SUM OF THE SERIES FOR $1 - 2/2! + 3/3! - \dots - n/n!$**

Aim:

Write a python program to to find sum of the following series for n terms: $1 - 2/2! + 3/3!$
 $\dots - n/n!$

Algorithm:

Program:

```
def sumofseries(num):  
    res = 0  
    fact = 1  
  
    for i in range(1, num+1):  
        fact *= i  
        if(i%2==0):  
            res = res - (i/ fact)  
        else:  
            res = res + (i/ fact)  
  
    return res  
  
n =int(input("Enter the range"))  
print("Sum: ", sumofseries(n))
```

Output:

Result:

Ex.No.7

MATRIX OF SUM AND PRODUCT

Aim:

Write a python program to calculate the matrix of sum and product for the given two matrices and display it

Algorithm:

Program:

```
X = [[1,2,3],  
     [4,5,6],  
     [7,8,9]]
```

```
Y = [[1,2,3],  
     [4,5,6],  
     [7,8,9]]
```

```
result = [[0,0,0],  
          [0,0,0],  
          [0,0,0]]
```

```
print("Matrix Addition")
```

```
for i in range(len(X)):
```

```
    for j in range(len(Y[0])):
```

```
        result[i][j] += X[i][j] + Y[i][j]
```

```
for r in result:
```

```
    print(r)
```

```
print("Matrix Multiplication")
```

```
for i in range(len(X)):
```

```
    for j in range(len(Y[0])):
```

```
        for k in range(len(Y)):
```

```
            result[i][j] += X[i][k] * Y[k][j]
```

for r in result:

print(r)

Output:

Result:

Ex.No.8 **CREATE MATHEMATICAL 3D OBJECTS**

Aim:

Write a python program and to create mathematical 3D objects in visual python

Algorithm:

Program:

```
import matplotlib.pyplot as plt
from matplotlib.patches import Ellipse
plt.axes()
print ("MENU")
print ("1-Circle")
print ("2-rectangle")
print ("3-Arrow")
print ("4-Ellipse")
print ("5-Polygon")
ch=int(input("enter Choice = "))
if ch==1:
    circle = plt.Circle((0, 0), radius=0.75, fc='y')
    plt.gca().add_patch(circle)
elif ch==2:
    rectangle = plt.Rectangle((10, 10), 100, 100, fc='r')
    plt.gca().add_patch(rectangle)
elif ch==3:
    arrow = plt.Arrow(1, 1, 0.5, 0.5)
    plt.gca().add_patch(arrow)
elif ch==4:
    ellipse = Ellipse((3, 3), 0.4, 0.2)
    plt.gca().add_patch(ellipse)
elif ch==5:
    points = [[2, 1], [6, 1], [8, 4]]
    line = plt.Polygon(points,facecolor='g', edgecolor='r', linewidth=3.0)
    plt.gca().add_patch(line)
else:
    print ("Invalid Choice")
plt.axis('scaled')
plt.show()
```

Output:

Result:

Ex.No.9

HISTOGRAM

Aim:

Write a python program and display the histogram in visual python

Algorithm:

Program:

```
import numpy as np
import matplotlib.pyplot as plt
data = [1,11,21,31,41]
plt.hist([1,11,21,31,41,51], bins=[0,10,20,30,40,50,60], weights=[10,1,40,33,6,8],
edgecolor="red")
plt.show()
```

Output:**Result:**

Ex.No.10

SINE AND COS WAVES

Aim:

Write a python program to display the sine and cos waves in the visual python

Algorithm:

Program:

```
import matplotlib.pyplot as plt
import numpy as np
st=np.arange(0,10,0.1)
ct=np.arange(0,10,0.1)
sine=np.sin(st)
cos=np.cos(ct)
plt.plot(st,sine)
plt.plot(ct,cos)
plt.title("Sine, Cos, Polynomial and Exponential Waves")
plt.xlabel("Time")
plt.ylabel("Sin and Cos (Time)")
plt.show()
```

Output:

Result:

Ex.No.11

PULSERATE VERSES HEIGHT

Aim:

Write a python program to display the graph for pulse rate and height variance

Algorithm:

Program:

```
import numpy as np
import matplotlib.pyplot as plt
x=[ ]
y=[ ]
for n in range(6):
    p = int(input('Enter pulse rate'));
    h = int(input('Enter the height'));
    x.append(p)
    y.append(h)
plt.plot(x,y)
plt.title("Pulse rate vs Height")
plt.xlabel("Pulse rate");
plt.ylabel("Height");
plt.show()
```

Output:

Result:

Ex.No.12

GRAPH FOR TIME AND VELOCITY

Aim:

Write a python program and to display the graph for time and velocity variance in velocity acceleration

Algorithm:

Program:

```
import numpy as np
import matplotlib.pyplot as plt
x=[ ]
y=[ ]
t = 0
et =int(input('Enter end time'));
a = int(input('Enter the Acceleration'));
u = int(input('Enter the Initial Velocity'));
while (t<=et):
    v = u + a * t
    x.append(t)
    y.append(v)
    t = t + 1
plt.plot(x,y)
plt.title("Velocity acceleration")
plt.xlabel("Time");
plt.ylabel("Velocity");
plt.margins(0)
plt.show()
```


Output:

Result:

Ex.No.13 **GRAPH FOR TIME AND DISTANCE**

Aim:

Write a python program and to display the graph for time and distance variance in velocity acceleration

Algorithm:

Program:

```
import numpy as np
import matplotlib.pyplot as plt
x=[]
y=[]
t = 0
et =int( input('Enter end time'));
a = int(input('Enter the Acceleration'));
u =int( input('Enter the Initial Velocity'));
while t<=et:
    v = u + a * t
    d = v * t + 0.5 * a * t ** 2
    x.append(t)
    y.append(d)
    t = t + 1
plt.plot(x,y)
plt.title("Velocity acceleration")
plt.xlabel("Time");
plt.ylabel("Distance");
plt.margins(0)
plt.show()
```

Output:

Result:

Ex.No.14 **GRAPH FOR VELOCITY AND DISTANCE**

Aim:

Write a python program and to display the graph for velocity and distance variance in velocity acceleration

Algorithm:

Program:

```
import numpy as np
import matplotlib.pyplot as plt
x=[]
y=[]
t = 0
et = input('Enter end time');
a = input('Enter the Acceleration');
u = input('Enter the Initial Velocity');
while t<=et:
    v = u + a * t
    s = (v * v - u * u) / 2 * a
    x.append(v)
    y.append(s)
    t = t + 1
plt.plot(x,y)
plt.title("Velocity acceleration")
plt.xlabel("Velocity");
plt.ylabel("Distance");
plt.margins(0)
plt.show()
```

Output:

Result: