SY BCA

XCA312-Python Programming Lab Manual

Practical No. 1

Aim: Write a program in Python to convert Celsius into Fahrenheit and vice versa.

First, we need to take input the celsius and use the following formula to convert it into Fahrenheit.

```
fahrenheit = (9/5)*celsius + 32
```

We can use the same formula to convert the Celcius to Fahrenheit in Python.

Code:

```
#input celcius
celsius = float(input("Enter Celcius: "))

#calculate fahrenheit using the formula
fahrenheit = (9/5)*celsius + 32
print("Fahrenheit ",fahrenheit)
```

Output:

```
Enter Celcius: 37.5
Fahrenheit 99.5
```

If we move all the variables to the left-hand side, we will get the formula to convert Fahrenheit back to Celsius:

```
celsius = (5/9)*(fahrenheit - 32)
```

Following is the python source code to convert Fahrenheit to Celsius.

Code:

```
#input fahrenheit
fahrenheit = float(input("Enter Fahrenheit: "))

celsius = (5/9)*(fahrenheit - 32)
print("Celsius ",celsius)
```

Output:

```
Enter Fahrenheit: 99.5
Celsius 37.5
```

Practical No. 2

Aim: WAP to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user.
Assign grades according to the following criteria:
Grade A: Percentage >=80
Grade B: Percentage>=70 and <80
Grade C: Percentage>=60 and <70
Grade D: Percentage>=40 and <60
Grade E: Percentage<40

Code:

```
subject_1 = float (input ())
subject_2 = float (input ())
subject_3 = float (input ())
subject_4 = float (input ())
subject_5 = float (input ())

total, average, percentage, grade = None, None, None, None

# It will calculate the Total, Average and Percentage
total = subject_1 + subject_2 + subject_3 + subject_4 + subject_5
average = total / 5.0
percentage = (total / 500.0) * 100

if percentage >= 80:
    grade = 'A'
elif percentage >= 70 and percentage < 80:
    grade = 'B'
elif percentage >= 60 and percentage < 70:
    grade = 'C'
elif percentage >= 40 and percentage < 60:
    grade = 'D'
else:
    grade = 'E'

# It will produce the final output
print ("\nThe Total marks is:   \t", total, "/ 500.00")
print ("\nThe Average marks is: \t", average)
print ("\nThe Percentage is:    \t", percentage, "%")
print ("\nThe Grade is:         \t", grade)
```

Output:

```
Enter the marks of five subjects::
98
92
87
```

82
75

The Total marks is: 434.0 / 500.00

The Average marks is: 86.8

The Percentage is: 86.8 %

The Grade is: B

Practical No. 3

Aim: WAP to display the first n terms of Fibonacci series.

Code:

```
# Write a program to print fibonacci series upto n terms in python
num = 10
n1, n2 = 0, 1
print("Fibonacci Series:", n1, n2, end=" ")
for i in range(2, num):
   n3 = n1 + n2
   n1 = n2
   n2 = n3
   print(n3, end=" ")

print()
```

Output

```
Fibonacci Series: 0 1 1 2 3 5 8 13 21 34
```

Practical No. 4

Aim: WAP to find factorial of the given number

Code:

```
num = int(input("Enter a number: "))
factorial = 1
if num < 0:
   print(" Factorial does not exist for negative numbers")
elif num == 0:
   print("The factorial of 0 is 1")
else:
   for i in range(1,num + 1):
       factorial = factorial*i
   print("The factorial of",num,"is",factorial)
```

Output:

```
Enter a number: 4
The factorial of 4 is 24
```

Practical No. 5

Aim: WAP to calculate the sum of two compatible matrices.

Code:

```
# Program to add two matrices using nested loop

X = [[12,7,3],
    [4 ,5,6],
    [7 ,8,9]]

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

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

# iterate through rows
for i in range(len(X)):
   # iterate through columns
   for j in range(len(X[0])):
       result[i][j] = X[i][j] + Y[i][j]

for r in result:
   print(r)
```

Output

```
[17, 15, 4]
[10, 12, 9]
[11, 13, 18]
```

Practical No. 6

Aim: Write a menu-driven program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user

Code:

```
while True:
   print("Menu Driven Program")
   print("1.Area of Circle")
   print("2.Area of Rectangle")
   print("3.Area of Square")
   print("4.Exit")
   choice=int(input("Enter your choice:"))
   if choice==1:
      radius=int(input("Enter radius of Circle:"))
      print("Area of Circle",3.14*radius*radius)

   elif choice==2:
      length=int(input("Enter length of Rectangle:"))
      breadth=int(input("Enter breadth of Rectangle:"))
      print("Area of Rectangle:",length*breadth)

   elif choice==3:
      side=int(input("Enter side of Square:"))
      print("Area:",side*side)
   elif choice==4:
      break
   else:
      print("Wrong Choice")
   repeat=input("Do you want to continue? (y/n)")
   if repeat=='n'or repeat=='N':
      break
```

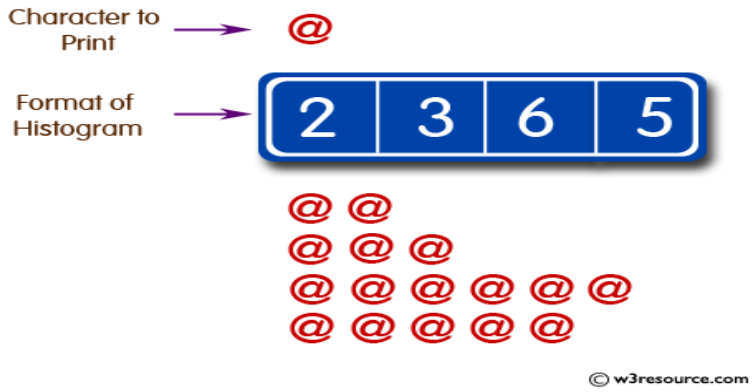
Output:

```
Menu Driven Program
1. Area of Circle
2. Area of Rectangle
3. Area of Square
4. Exit
Enter your choice:3
Enter the side of Square:5
Area: 25
```

Practical No. 7

Aim: WAP to read n integers and display them as a histogram

Pictorial Presentation:



Code:

```
def histogram( items ):
    for n in items:
        output = ''
        times = n
        while( times > 0 ):
          output += '*'
          times = times - 1
        print(output)

histogram([2, 3, 6, 5])
```

Output:

```
**
***
******
*****
```

Practical No. 8

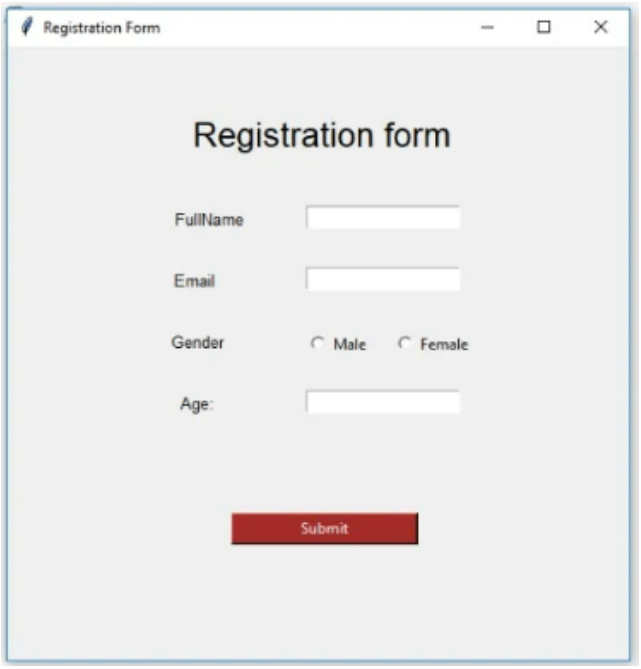
Aim: Create a form to design a student information system, using various tools like buttons, check boxes, radio buttons, and text boxes.

Code:

```
from tkinter import*
base = Tk()
base.geometry('500x500')
base.title("Registration Form")

labl_0 = Label(base, text="Registration form",width=20,font=("bold", 20))
labl_0.place(x=90,y=53)


labl_1 = Label(base, text="FullName",width=20,font=("bold", 10))
labl_1.place(x=80,y=130)

entry_1 = Entry(base)
entry_1.place(x=240,y=130)

labl_2 = Label(base, text="Email",width=20,font=("bold", 10))
labl_2.place(x=68,y=180)

entry_02 = Entry(base)
entry_02.place(x=240,y=180)

labl_3 = Label(base, text="Gender",width=20,font=("bold", 10))
labl_3.place(x=70,y=230)
Radiobutton(base, text="Male",padx = 5,  value=1).place(x=235,y=230)
Radiobutton(base, text="Female",padx = 20, value=2).place(x=290,y=230)

labl_4 = Label(base, text="Age:",width=20,font=("bold", 10))
labl_4.place(x=70,y=280)


entry_02 = Entry(base)
entry_02.place(x=240,y=280)

Button(base, text='Submit',width=20,bg='brown',fg='white').place(x=180,y=380)
# it will be used for displaying the registration form onto the window
base.mainloop()
print("Registration form is created seccussfully...")
```

Output:

```
Registration form is created successfully...
```


Registration Form
Registration form
FullName
Email
Gender
Male
Female
Age:
Submit