

Practical No.1

Write a python program to convert the given temperature From Fahrenheit to Celsius and vice versa depending upon users choice.

Code:

```
temp = input("Input the temperature you like to convert? : ")
degree = int(temp[:-1])
i_convention = temp[-1]

if i_convention.upper() == "C":
    result = int(round((9 * degree) / 5 + 32))
    o_convention = "Fahrenheit"
elif i_convention.upper() == "F":
    result = int(round((degree - 32) * 5 / 9))
    o_convention = "Celsius"
else:
    print("Input proper convention.")
    quit()
print("The temperature in", o_convention, "is", result, "degrees.")
```

Output:

Input the temperature you like to convert? : 45F

The temperature in Celsius is 7 degrees.

Input the temperature you like to convert? : 105C

The temperature in Fahrenheit is 221 degrees.

Practical No.2

Write a python program to input any 10 numbers and calculate their average using user defined function.

Code:

```
print("Enter 'x' for exit.");
print("Enter any 10 numbers to find average: ");
n1 = input();
if n1 == 'x':
    exit();
else:
    n2 = input();
    n3 = input();
    n4 = input();
    n5 = input();
    n6 = input();
    n7 = input();
    n8 = input();
    n9 = input();
    n10 = input();
    number1 = int(n1);
    number2 = int(n2);
    number3 = int(n3);
    number4 = int(n4);
    number5 = int(n5);
    number6 = int(n6);
    number7 = int(n7);
    number8 = int(n8);
    number9 = int(n9);
    number10 = int(n10);
    sum = number1 + number2 + number3 + number4 + number5 + number6 + number7 +
number8 + number9 + number10;
    average = sum/10;
    print("Average of entered 10 numbers is",average);
```

Output:

```
Enter 'x' for exit.
Enter any 10 numbers to find average:
34
12
1
2
4
5
7
4
8
23
Average of entered 10 numbers is 10.0
```

Practical No.3

Write a Python program to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user using user-defined function.

Code:

```
import os
os.system('cls')
def rectarea(l,b):
    return l * b
def sqarea(s):
    return s * s
def circlearea(r) :
    return 3.14 * r * r
def triarea(b,h):
    return 0.5 * b * h
a1=int(input("enter the length: "))
a2=int(input("enter the breadth: "))
print("area of rectangle : " , rectarea(a1,a2))
b1=int(input("enter the side of square: "))
print("area of square : " , sqarea(b1))
n1=int(input("enter the radius : "))
print("area of circle : " , circlearea(n1))
m1=int(input("enter the base : "))
m2=int(input("enter the height : "))
print("area of triangle : " , triarea(m1,m2))
```

Output:

```
enter the length: 6
enter the breadth: 4
area of rectangle : 24
enter the side of square: 5
area of square : 25
enter the radius : 7
area of circle : 153.86
enter the base : 3
enter the height : 7
area of triangle : 10.5
```

Practical No. 4

Write a program in python to print current date and time. In addition to this, print each component of date (i.e. year, month, day) and time (i.e. hours, minutes and microseconds) separately.

Code:

```
from datetime import *
tdate=datetime.today()
print("Current date and time: " , tdate)
print("-----")
print("year, month, day")
print("-----")
print("Current year: ", tdate.strftime("%Y"))
print("Month of year: ", tdate.strftime("%B"))
print("Day of the month : ", tdate.strftime("%d"))
ttime=datetime.now()
print("Time in  hours, minutes Seconds and microseconds")
print("-----")
print("Hours      : ", ttime.strftime("%I"))
print("Minutes    : ", ttime.strftime("%M"))
print("Seconds     : ", ttime.strftime("%S"))
print("MicroSeconds : ", ttime.strftime("%f"))
```

Output:

Current date and time: 2019-03-17 09:37:48.721345

year, month, day

Current year: 2019

Month of year: March

Day of the month : 17

Time in hours, minutes Seconds and microseconds

Hours : 09

Minutes : 37

Seconds : 48

MicroSeconds : 784349

Practical No. 5

Write a program in Python to Calculate the Power using Recursion

```
def power(base,exp):  
    if(exp==1):  
        return(base)  
    if(exp!=1):  
        return(base*power(base,exp-1))  
  
base=int(input("Enter base: "))  
exp=int(input("Enter exponential value: "))  
print("Result:",power(base,exp))
```

OUTPUT

Enter base: 5

Enter exponential value: 3

Result: 125

Practical No. 6

Write a Program in Python Check whether a String is Palindrome or not using Recursion

```
def is_palindrome(s):  
    if len(s) < 1:  
        return True  
    else:  
        if s[0] == s[-1]:  
            return is_palindrome(s[1:-1])  
        else:  
            return False  
  
a=str(input("Enter string:"))  
  
if(is_palindrome(a)==True):  
    print("String is a palindrome!")  
else:  
    print("String isn't a palindrome!")
```

OUTPUT

Enter string:mom

String is a palindrome!

Enter string:hello

String isn't a palindrome!

Practical No. 7

Write a Program in Python to Map Two Lists into a Dictionary

```
keys=[]

values=[]

n=int(input("Enter number of elements for dictionary:"))

print("For keys:")

for x in range(0,n):

    element=int(input("Enter element" + str(x+1) + ":"))

    keys.append(element)

print("For values:")

for x in range(0,n):

    element=int(input("Enter element" + str(x+1) + ":"))

    values.append(element)

d=dict(zip(keys,values))

print("The dictionary is:")

print(d)
```

OUTPUT:

```
Enter number of elements for dictionary:3
For keys:
Enter element1:1
Enter element2:2
Enter element3:3
For values:
Enter element1:1
Enter element2:4
Enter element3:9
The dictionary is: {1: 1, 2: 4, 3: 9}
```

Practical No. 8

Write a Program in Python to Create a Class which Performs Basic Calculator Operations

```
class cal():
    def __init__(self,a,b):
        self.a=a
        self.b=b
    def add(self):
        return self.a+self.b
    def mul(self):
        return self.a*self.b
    def div(self):
        return self.a/self.b
    def sub(self):
        return self.a-self.b
a=int(input("Enter first number: "))
b=int(input("Enter second number: "))
obj=cal(a,b)
choice=1
while choice!=0:
    print("0. Exit")
    print("1. Add")
    print("2. Subtraction")
    print("3. Multiplication")
    print("4. Division")
    choice=int(input("Enter choice: "))
    if choice==1:
        print("Result: ",obj.add())
    elif choice==2:
        print("Result: ",obj.sub())
    elif choice==3:
        print("Result: ",obj.mul())
    elif choice==4:
        print("Result: ",round(obj.div(),2))
    elif choice==0:
        print("Exiting!")
```



```
else:  
    print("Invalid choice!!")  
print()
```

OUTPUT:

```
Enter first number: 2  
Enter second number: 4  
0. Exit  
1. Add  
2. Subtraction  
3. Multiplication  
4. Division  
Enter choice: 1  
Result: 6  
0. Exit  
1. Add  
2. Subtraction  
3. Multiplication  
4. Division  
Enter choice: 3  
Result: 8  
0. Exit  
1. Add  
2. Subtraction  
3. Multiplication  
4. Division  
Enter choice: 0  
Exiting!
```

Practical No. 9

Write a Program in Python to implement Breadth First Search

```
graph = {
    '5' : ['3','7'],
    '3' : ['2', '4'],
    '7' : ['8'],
    '2' : [],
    '4' : ['8'],
    '8' : []
}

visited = [] # List for visited nodes.
queue = []    #Initialize a queue

def bfs(visited, graph, node): #function for BFS
    visited.append(node)
    queue.append(node)

    while queue:            # Creating loop to visit each node
        m = queue.pop(0)
        print (m, end = " ")

        for neighbour in graph[m]:
            if neighbour not in visited:
                visited.append(neighbour)
                queue.append(neighbour)

# Driver Code
print("Following is the Breadth-First Search")
bfs(visited, graph, '5') # function calling
```

OUTPUT:

Following is the Breadth-First Search

5 3 7 2 4 8

Practical No. 10

Write a Python program to calculate the subtraction of two compatible matrices.

Code:

```
import os
os.system('cls')
mat1=[[0,0,0],[0,0,0],[0,0,0]]
mat2=[[0,0,0],[0,0,0],[0,0,0]]
mat3=[[0,0,0],[0,0,0],[0,0,0]]
print("enter value of first matrix:")
for i in range (0,3):
    for j in range (0,3):
        mat1[i][j]= int(input())
print("enter value of second matrix:")
for i in range (0,3):
    for j in range (0,3):
        mat2[i][j]= int(input())
print("first matrix is : ", mat1)
print("second matrix is : ",mat2)
for i in range (0,3):
    for j in range (0,3):
        mat3[i][j]= mat1[i][j]-mat2[i][j]
print("Subraction of two matrix : ",mat3)
```

Output:

enter value of first matrix:

10
11
12
13
14
15
16
17
18

enter value of second matrix:

9
8
7
6
5

4
3
2
1

OUTPUT:

first matrix is : $[[10, 11, 12], [13, 14, 15], [16, 17, 18]]$

second matrix is : $[[9, 8, 7], [6, 5, 4], [3, 2, 1]]$

Subraction of two matrix : $[[1, 3, 5], [7, 9, 11], [13, 15, 17]]$