Practical - 1 : Basics of Python

1. Write a Python Program to Convert Celsius to Fahrenheit and vice –a-versa.

Code:

```
def c2f(c):
    f = (c * 9 / 5) + 32
    print('Celsius :' + str(c) + 'Fahrenheit:' + str(f))

def f2c(f):
    c = ((f-32) * (5/9))
    print('Fahrenheit:' + str(f) + 'Celsius:' +str(c))

c = float(input("Enter temp value in Degree Celsius:"))
c2f(c)
f2c(float(input("Enter Degree Fahrenheit:")))
```

Output:

```
Enter temp value in Degree Celsius:25
Celsius :25.0Fahrenheit:77.0
Enter Degree Fahrenheit:77
Fahrenheit:77.0Celsius:25.0
```

2. Write a program in python to swap two variables without using temporary variable.

Code:

```
print("Enter the value of X and Y")
x = float(input("Enter the value of X:"))
y = float(input("Enter the value of Y:"))
x,y = y,x
print("After swapping value is X:"+str(x)+'and Y is:'+str(y))
```

Output:

```
Enter the value of X and Y
Enter the value of X:10
Enter the value of Y:20
After swapping value is X:20.0and Y is:10.0
```

3. Write a Python Program to Convert Decimal to Binary, Octal and Hexadecimal.

Code:

```
def d2b(d):
    b = []
    if d==0:
        b.append(0)
    while(d>0):
        b.append((d % 2))
        d = d // 2
```

```
    b.reverse()
    return b
def d2o(d):
    o = []
    if d==0:
        o.append(0)
    while(d>0):
        o.append( (d%8) )
        d = d // 8
    o.reverse()
    return o
def d2h(d):
    h = []
    if d==0:
        h.append(0)
    hv = {0: "0", 1: "1", 2: "2", 3: "3", 4: "4", 5: "5", 6: "6", 7: "7",
8: "8", 9: "9", 10: "A", 11: "B", 12: "C", 13: "D", 14: "E", 15: "F"}
    while(d>0):
        h.append( hv.get(d%16,"") )
        d = d // 16
    h.reverse()
    return h
def main(d):
    print("\n\t(" + str(d) + ")10\t=\t(" + ''.join(map(str, d2b(d))) +
")2\t=\t(" + ''.join(map(str, d2o(d))) + ")8\t=\t(" + ''.join(map(str,
d2h(d))) + ")16")

main(int(input("Enter Decimal Value : ")))
```

Output:

```
Enter Decimal Value : 2000

     (2000)10    =    (11111010000)2  =    (3720)8 =    (7D0)16
```

4. Write a program to make a simple calculator (using functions).

Code:

```
num1 = float(input("Enter First number: "))
num2 = float(input("Enter Second number: "))
def add(x, y):
    print("Addition: ", x + y)

def sub(x, y):
    print("Subtraction: ", x - y)

def mul(x, y):
    print("Multiplication", x * y)

def divison(x, y):
    print("Division: ", x / y)

add(num1,num2)
sub(num1,num2)
mul(num1,num2)
divison(num1,num2)
```

Output:

```
Enter First number: 10
Enter Second number: 5
Addition:  15.0
Subtraction:  5.0
Multiplication 50.0
Division:  2.0
```

5. Write a program in python to find out maximum and minimum number out of three user entered number.

Code:

```
def max_min():
    num = [int(input("Enter a number: ")) for i in range(3)]
    print("maximum number: ", max(num), " and minimum number: ", min(num))
max_min()
```

Output:

```
Enter a number: 10
Enter a number: 20
Enter a number: 15
maximum number:  20  and minimum number:  10
```

6. Write a program which will allow user to enter 10 numbers and display largest odd number from them. It will display appropriate message in case if no odd number is found.

Code:

```
lst1=[]
lst2=[]
n=int(3)
for i in range(0,n):
    ele = int(input("Enter Element:"))
    lst1.append(ele)
print(lst1)
odd=int(0)
for i in lst1:
    if (i % 2 == 1):
        lst2.append(i)
        odd += 1
if(odd==0):
    print("odd number is not found")
else:
    print("The Maximum odd is:",max(lst2))
```

Output:

```
Enter Element:12
Enter Element:14
Enter Element:15
[12, 14, 15]
The Maximum odd is: 15
```

7. Write a Python program to check if the number provided by the user is an Armstrong number.

Code:

```
num=float(input("Enter a number to check whether it is armstrong or not:
"))
sum=0
tmp=num
while tmp>0:
    digit=tmp%10
    sum+=digit**3    #power
    tmp//=10    #int division
if num==sum:
    print(num," is an Armstrong Number.")
else:
    print(num," is not an Armstrong Number.")
```

Output:

```
Enter a number to check whether it is armstrong or not: 153
153.0  is an Armstrong Number.
```

8. Write a Python program to check if the number provided by the user is a palindrome or not.

Code:

```
def rev(num):
    r = 0
    t = 0
    while(num>0):
        t = num%10
        r = r * 10
        r = r + t
        num = num // 10
    return r
def main():
    num = int(input("Enter a Number:"))
    print("\t Reverse Digits:" + str(rev(num)))
    if num == rev(num):
        print("\t\t It's a Palindrome")
    else:
        print("\n\t It's Not a Palindrome")
main()
```

Output:

```
Enter a Number:15351
      Reverse Digits:15351
          It's a Palindrome
```

9. Write a Python program to perform following operation on given string input: a) Count Number of Vowel in given string b) Count Length of string (do not use Len ()) c) Reverse string d) Find and replace operation e) check whether string entered is a palindrome or not

Code:

```
def cv(s):
    cv=0
    for c in s:
        if c == 'a' or c == 'A' or c == 'e' or c == 'E' or c == 'i' or c == 
'I' or c == 'o' or c == 'O' or c == 'u' or c == 'U':
            cv += 1
    return cv

def sl(s):
    l=0
    for c in s:
        l = l+1
    return l

def rev(s):
    return s[::-1]

def main():
    s=input("Enter a string: ")
    print("\tNumber of Vowels are : " + str(cv(s)))
    print("\tString Length : " + str(sl(s)))
    print("\tReverse String : " + rev(s))
    c = input("Enter What you want to Find Replace : ")
    print("\n\tFound at : " + str(s.find(c)))
    r = input("Enter What you want to Replace with : ")
    s = s.replace(c, r)
    print("\n\tString after Replace is : " + s)

    if s == rev(s):
        print("\n\tString Entered is a Palindrome")
    else:
        print("\n\tString Entered is not a Palindrome")

main()
```

Output:

```
Enter a string: hello world
    Number of Vowels are : 3
    String Length : 11
    Reverse String : dlrow olleh
Enter What you want to Find Replace : world

    Found at : 6
Enter What you want to Replace with : python

    String after Replace is : hello python

    String Entered is not a Palindrome

Enter a string: sys
    Number of Vowels are : 0
    String Length : 3
    Reverse String : sys

    String Entered is a Palindrome
```

10. Define a procedure histogram () that takes a list of integers and prints a histogram to the screen. For example, histogram ([4, 9, 7]) should print the following: ** ********* *********

Code:

```
n = int(input("Enter Total no of elements:"))
arr = {}
for i in range(n):
    ele = int(input("Enter Number:"))
    arr[i] = ele
for i in range(n):
    print('* ' * arr[i])
```

Output:

```
Enter Total no of elements:3
Enter Number:1
Enter Number:5
Enter Number:3
*
* * * * *
* * *
```

11. Write a program in python to implement Fibonacci series up to user entered number. (Use recursive Function)

Code:

```
def fibonacci(n):
     if n <= 1:
        return n
     else:
        return (fibonacci(n - 1) + fibonacci(n - 2))
value = int(input("Enter size of series:"))
print("Fibonacci sequence:")
for i in range(value):
    print(fibonacci(i))
```

Output:

```
Enter size of series: 5
Fibonacci sequence:
0
1
1
2
3
```

12. Write a program in python to implement Factorial series up to user entered number.

Code:

```
def factorial(n):
     if n == 1:
        return n
     else:
        return n*factorial(n-1)
num = int(input("Enter a number: "))
if num < 0:
 print("Sorry, factorial does not exist for negative numbers")
elif num == 0:
 print("The factorial of 0 is 1")
else:
 print("The factorial of",num,"is",factorial(num))
```

Output:

```
Enter a number: 5
The factorial of 5 is 120
```

13. Write a program to display all prime numbers within a range

Code:

```
lower = int(input("Enter lower range: "))
upper = int(input("Enter upper range: "))

for num in range(lower, upper + 1):
    if num > 1:
```

```
        for i in range(2, num):
            if (num % i) == 0:
                break
        else:
            print(num)
```

Output:

```
Enter lower range: 10
Enter upper range: 20
11
13
17
19
```

14. Given a range of the first 10 numbers, Iterate from the start number to the end number, and In each iteration print the sum of the current number and previous number

Code:

```
n= int(input ("enter a number"))
s=0
for ele in range (n+1):
    s+=ele
    print (s)
```

Output:

```
enter a number 5
0
1
3
6
10
15
```

15. Given a two list of numbers create a new list such that new list should contain only odd numbers from the first list and even numbers from the second list

Code:

```
def Split(mix):
    even= []
    odd = []
    for i in mix:
        if (i % 2 == 0):
            even.append(i)
        else:
            odd.append(i)
    print("Even lists:", even)
    print("Odd lists:", odd)
```

```
mix = [2, 5, 13, 17, 51, 62, 73, 84, 95, 100]
Split(mix)
```

Output:

```
Even lists: [2, 62, 84, 100]
Odd lists: [5, 13, 17, 51, 73, 95]
```