

Practical 1

a. Create a program that asks the user to enter their name and their age. Print out a message addressed to them that tells them the year that they will turn 100 years old.

```
In [4]: name=input("Enter your name :- ")
age=int(input("Enter your age in years :- "))
fut_year = (100-age) + 2022
print(name,"will turn 100 years old in the year",fut_year)
```

```
Enter your name :- Rohan
Enter your age in years :- 21
Rohan will turn 100 years old in the year 2101
```

b. Enter the number from the user and depending on whether the number is even or odd, print out an appropriate message to the user.

```
In [5]: num=int(input("Enter a positive integer :- "))
if num%2==0:
    print(num,"is an even number.")
else:
    print(num,"is an odd number.")
```

```
Enter a positive integer :- 234
234 is an even number.
```

c. Write a program to generate the Fibonacci series.

```
In [6]: n1,n2=0,1
n=int(input("Enter the number of terms required:- "))
if n<=0 :
    print("Please enter a positive integer!")
else:
    print("The Fibonacci Sequence: ")
    for i in range(1,n+1):
        n3=n1+n2
        print(n1,end=" ")
        n1=n2
        n2=n3
        i+=1
```

Enter the number of terms required:- 13
The Fibonacci Sequence:
0 1 1 2 3 5 8 13 21 34 55 89 144

d. Write a function that reverses the user defined value.

```
In [7]: num=int(input("Enter a positive number :- "))
flag=0
a=0
if num<0:
    print("Please enter a positive number!")
else:
    while num>0:
        remainder=num%10
        num=num//10
        flag=flag*10+remainder
    print("The Reverse of the number is",flag)
```

Enter a positive number :- 124
The Reverse of the number is 421

e. Write a function to check the input value is Armstrong and also write the function for Palindrome.

```
In [8]: num = int(input("Enter the number :- "))
if num<0:
    print ("Enter a positive integer:- ")
else:
    flag=0
    copy=num
    while copy>0:
        remainder=copy%10
        flag=flag+remainder**3
        copy//=10
    if flag==num:
        print("The number is an armstrong number.")
    else:
        print("The number is not an armstrong number.")
    flag=0
    copy=num
    while copy>0:
        remainder=copy%10
        copy//=10
        flag=flag*10+remainder
    if flag==num:
        print("The number is a Palindrome.")
    else:
        print("The number is not a Palindrome.")
```

Enter the number :- 123

The number is not an armstrong number.

The number is not a Palindrome.

f. Write a recursive function to print the factorial for a given number.

```
In [9]: def recur_factorial(n):  
        if n == 1:  
            return n  
        else:  
            return n*recur_factorial(n-1)  
num = int(input("Enter a number: "))  
if num < 0:  
    print("Factorial does not exist for negative numbers")  
elif num == 0:  
    print("The factorial of 0 is 1")  
else:  
    print("The factorial of",num,"is",recur_factorial(num))
```

Enter a number: 6
The factorial of 6 is 720

Practical 2

a. Write a function that takes a character (i.e. a string of length 1) and returns True if it is a vowel, False otherwise.

```
In [51]: def vowel ():  
        char=input("Enter any character:- ")  
        if (len(char)!=1):  
            print("Please enter a valid character!")  
        else:  
            char=char.lower()  
            vowels=("a","e","i","o","u")  
            if char in vowels:  
                return True  
            else:  
                return False  
print(vowel())
```

Enter any character:- u
True

b. Define a function that computes the length of a given list or string.

```
In [12]: def length():  
    String = input("Enter any string :")  
    count=0  
    for i in String:  
        count+=1  
    print("The length of the string is",count)  
length()
```

```
Enter any string :Hello, World !!  
The length of the string is 15
```

c. Define a procedure histogram() that takes a list of integers and prints a histogram to the screen.

```
In [24]: List=[8,6,4,5]  
count=0  
length=len(List)  
while count<length:  
    print(List[count]*"")  
    count+=1
```

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

Practical 3

a. Write a function to check a sentence to see if it is a pangram or not.

```
In [28]: def pangram(string):
    alphabets = "abcdefghijklmnopqrstuvwxyz"
    for char in alphabets:
        if char not in string.lower():
            return False

    return True
string = input("Enter a string :")
if(pangram(string) == True):
    print("Yes, It is a pangram.")
else:
    print("No, It is not a pangram")
```

Enter a string :the quick brown fox jumps over the lazy dog
Yes, It is a pangram.

b. Write a program that prints out all the elements of the list that are less than 5.

```
In [29]: a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]
b = []
for i in a:
    if i < 5:
        b.append(i)
print(b)
```

[1, 1, 2, 3]

Practical 4

a. Write a program that takes two lists and returns True if they have at least one common member

```
In [48]: def common (list1,list2):  
         for i in list1:  
             if i in list2:  
                 return True  
print(common([13,313,32,2,14,21,3], [14,34,143,35,5]))  
print(common([43,34,3,3,14,5], [235,52,245,25,4]))
```

True

None

b. Write a Python program to print a specified list after removing the 0th, 2nd, 4th and 5th elements

```
In [47]: list = [2,4,6,8,10,12,14,16,18,20]  
list.pop(0)  
list.pop(1)  
list.pop(2)  
list.pop(2)  
print(list)
```

[4, 8, 14, 16, 18, 20]

c. Write a Python program to clone or copy a list.

```
In [50]: def clone(og_list):  
         clone_list = og_list.copy()  
         return clone_list  
og_list= [1224,134,1224,24,1224]  
clone_list = clone(og_list)  
print("The Original List : ", og_list)  
print("The Copied List : ",clone_list)
```

The Original List : [1224, 134, 1224, 24, 1224]

The Copied List : [1224, 134, 1224, 24, 1224]

Practical 5

a. Write a Python script to sort (ascending and descending) a dictionary by value.

```
In [1]: Attendance = {"Batch1": 30, "Batch2": 27, "Batch3": 29}

sorted_values = sorted(Attendance.values())
sorted_dict = {}
for i in sorted_values:
    for k in Attendance.keys():
        if Attendance[k] == i:
            sorted_dict[k] = Attendance[k]
print("The dictionary sorted in ascending order :", sorted_dict)

sorted_values = sorted(Attendance.values(),reverse=True)
sorted_dict = {}
for i in sorted_values:
    for k in Attendance.keys():
        if Attendance[k] == i:
            sorted_dict[k] = Attendance[k]
print("The dictionary sorted in descending order :", sorted_dict)
```

The dictionary sorted in ascending order : {'Batch2': 27, 'Batch3': 29, 'Batch1': 30}

The dictionary sorted in descending order : {'Batch1': 30, 'Batch3': 29, 'Batch2': 27}

b. Write a Python script to concatenate following dictionaries to create a new one.

```
In [2]: dic1={1:10, 2:20}
dic2={3:30, 4:40}
dic3={5:50,6:60}
dic4 = {}
for d in (dic1, dic2, dic3): dic4.update(d)
print("The concatenated list is",dic4)
```

The concatenated list is {1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60}

c. Write a Python program to sum all the items in a dictionary

```
In [3]: def Sum(dict):  
        return sum(dict.values())  
marks = {"Physics": 85, "Mathematics": 88, "Statistics": 76}  
print("Sum of the items in dictionary is", Sum(marks))
```

Sum of the items in dictionary is 249