MEGHNAD SAHA INSTITUTE OF TECHNOLOGY

Techno Complex, Madurdaha,Beside NRI Complex, Post-Uchhepota, Kolkata 700 150

LABORATORY NOTE BOOK

MAKAUT ODD SEMESTER 2024

[MASTERS OF COMPUTER APPLICATION]

[PROGRAMMING CONCEPT WITH PYTHON LAB (MCAN191)]

[RUPAK SARKAR]

ROLL NO: 14271024036 REGN. NO.: 241420510045

STREAM: MCA SEMESTER: I (1ST)

YEAR: 1ST Year SESSION: 2024-2026

MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY

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"LIST OF ASSIGNMENT/EXPERIMENT SUBMISSION DETAILS"

SL. NO.	ASSIGNMENT / EXPERIMENT NAME	DATE OF EXPERIMENT	DATE OF SUBMISION	CHECKED BY	REMARKS (ANY DEVIATION REGARDING SUBMISSION DATES, CONTENT, FORMAT, ETC)
1.	WAP to implement Selection Sort.	6/12/2024	13/12/2024		
2.	WAP to implement Bubble Sort.	6/12/2024	13/12/2024		
3.	WAP to find GCD of two numbers using Recursion.	6/12/2024	13/12/2024		
4.	WAP to print Fibonacci series using Recursion.	6/12/2024	13/12/2024		
5.	WAP to print highest frequency character in your name.	6/12/2024	13/12/2024		
6.	WAP to take list of numbers as input and store them in Even and Odd lists using Lambda Function.	6/12/2024	13/12/2024		

OBSERVATIONS / COMMENTS ON THE OVERALL PERFORMANCE:

Signature in full with date

Faculty / Technical Assistant

Signature in full with date

Lab Examiner

Q.1. Write a program in python to implement selection sort.

Ans:

```
def selectionsort(ls):
    n=len(ls)
    for i in range(n):
        min=ls[i]
        loc=i
        for j in range(i+1,n):
            if(ls[j]< min):
                min=ls[j]
                loc=j
            if(loc!=i):
                temp=ls[i]
                ls[i]=ls[loc]
                ls[loc]=temp

if __name__ =="__main__":
    ls=[12,21,13,31,14,41,15]
    n=len(ls)
    print("\n Elements in the list are:",end="")
    for i  in range(n):
        print(ls[i],end=" ")
    selectionsort(ls)
    print("\n Elements in the list in sorted order are:",end=" ")
    for i in range(n):
        print(ls[i],end=" ")
```

Output:

```
 Elements in the list are:12 21 13 31 14 41 15
 Elements in the list in sorted order are: 12 13 14 15 21 31 41
```

Q.2. Write a python program to implement Bubble Sort.

Ans:

```
def bubblesort(ls):
    n = len(ls)
    for i in range(n):
        for j in range(0, n-i-1):
            if ls[j] > ls[j+1]:
                ls[j], ls[j+1] = ls[j+1], ls[j]


if __name__ == "__main__":
    ls = list(map(int, input("Enter the elements for sorting: ").split()))
    n = len(ls)


    print("\nElements in the list are:", end=" ")
    for i in range(n):
        print(ls[i], end=" ")


    bubblesort(ls)
    print("\nElements in the list in sorted order are:", end=" ")
    for i in range(n):
        print(ls[i], end=" ")
```

Output:

```
Enter the elements for sorting:  5 10 8 7 6 9 4 1 2

Elements in the list are: 5 10 8 7 6 9 4 1 2
Elements in the list in sorted order are: 1 2 4 5 6 7 8 9 10
```

Q.3. Write a Python program to find the GCD of two numbers using recursion.

Ans:

```
def gcd(a,b):
```

```
    if b==0:
        return a
    else:
        return gcd(b,a%b)

if __name__=="__main__":
    a,b=[int(c) for c in input ("Enter two numbers:").split()]
    r=gcd(a,b)
    print("GCD of %d and %d is %d" %(a,b,r))
```

Output:

```
Enter two numbers: 48 18
GCD of 48 and 18 is 6
```

Q.4. Write a Python program to find the Fibonacci Series using recursion.

Ans:

```
def fibonacci(n):
    if n<=0:
        return 0
    elif n==1:
        return 1
    else:
        return fibonacci(n-1)+ fibonacci(n-2)

if __name__=="__main__":
    num=int(input("Enter a number:"))
    for i in range(num):
        print(fibonacci(i),end=" ")
```

Output:

```
Enter a number: 10
0 1 1 2 3 5 8 13 21 34
```

Q.5. Write a Python program to find the highest frequency character in your name.

Ans:

```
st=input("Enter Your Name:")
dt={}
for i in st:
    if i in dt:
        dt[i]+=1
    else:
        dt[i]=1
print(dt)
largest=max(dt,key=dt.get)
print("The Highest Frequency Letter is:",largest)
```

Output:

```
Enter Your Name: rupak
{'r': 1, 'u': 1, 'p': 1, 'a': 1, 'k': 1}
The Highest Frequency Letter is: r
```

Q.6. Write a Python program to take a list of numbers as input and store the even and odd numbers separately into different lists using the lambda function.

Ans:

```
ls=[x for x in range(1,21)]
even=list(filter(lambda x:(x%2==0),ls))
odd=list(filter(lambda x:(x%2!=0),ls))
print("The given list is:",ls)
print("Even numbers are:",even)
print("Odd numbers are:",odd)
```

Output:

```
The given list is: [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]
Even numbers are: [2, 4, 6, 8, 10, 12, 14, 16, 18, 20]
Odd numbers are: [1, 3, 5, 7, 9, 11, 13, 15, 17, 19]
```