Data Structure Lab

Assignment No-1

Name : Sanket Shivaji Jadhav.

Prn: 2020BTECS00005

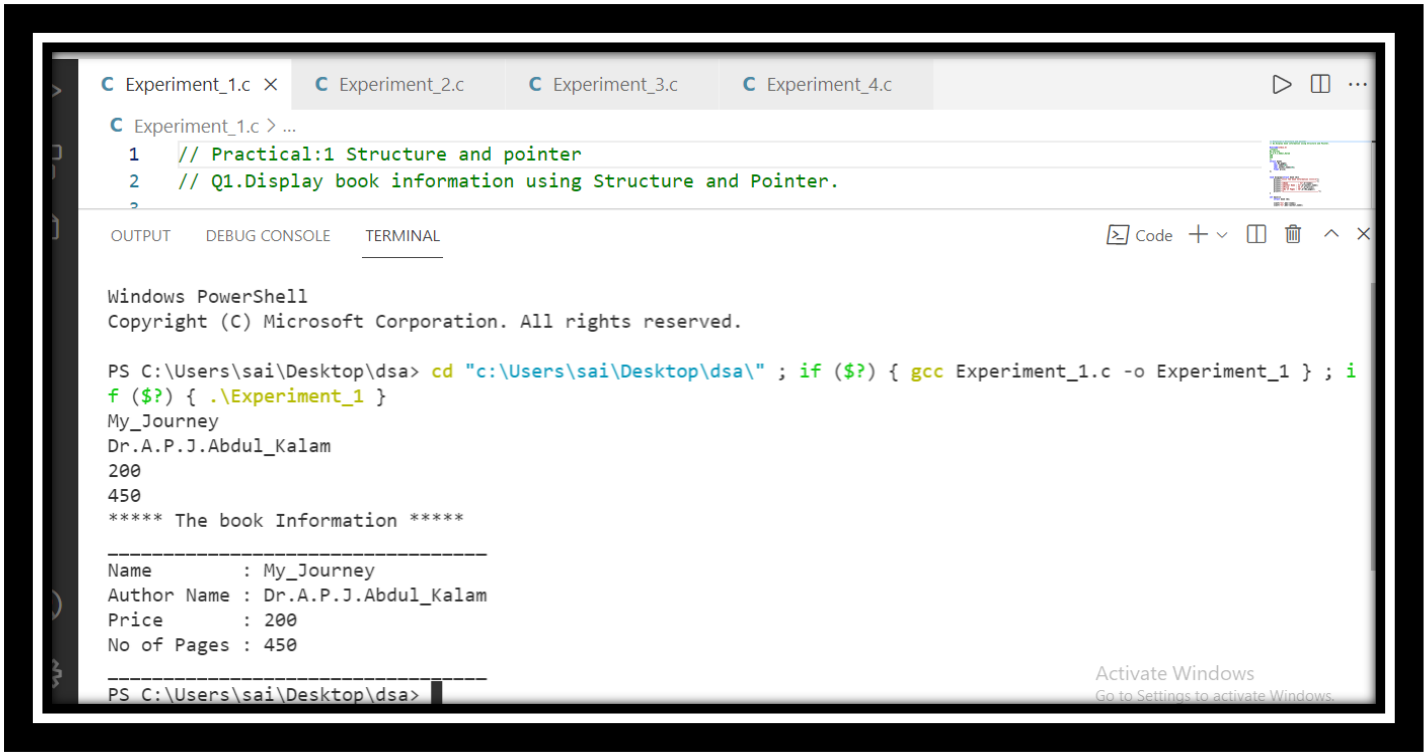
1. Program based on Structures and Pointers in c .

a. Q1.Display book information using Structure and Pointer.

```
#include<stdio.h>
struct book{
    int No_pages;
    char name[20];
    char author_name[20];
    float price;
};


void display(struct book *b){
    printf("***** The book Information *****\n");
    printf("_____________________________________");
    printf("\nName           : %s",b->name);
    printf("\nAuthor Name : %s",b->author_name);
    printf("\nPrice          : %2.f",b->price);
    printf("\nNo of Pages : %d",b->No_pages);
    printf("\n_____________________________________");
}
int main(){
    struct book *b1;

    scanf("%s",&b1->name);
```

```
    scanf("%s",&b1->author_name);
    scanf("%f",&b1->price);
    scanf("%d",&b1->No_pages);

    display(b1);
}
```

OUTPUT :

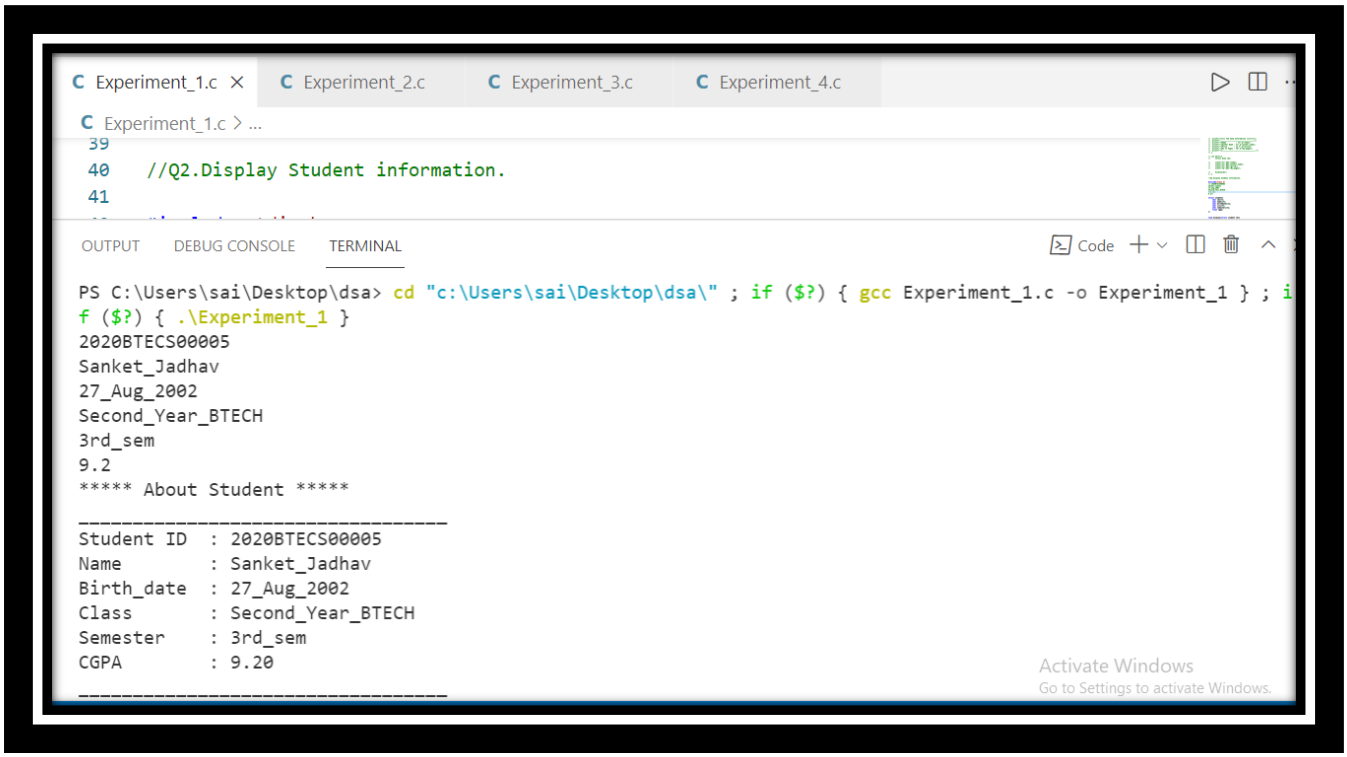


b. //Q2.Display Student information.

```
#include<stdio.h>

struct student{
    char id[20];
    char name[20];
    char birthdate[20];
```

```
    char cls[20];
    char semester[20];
    float cgpa;
};


void display(struct student *b){
    printf("***** About Student *****\n");
    printf("_____________________________________");
    printf("\nStudent ID   : %s",b->id);
    printf("\nName           : %s",b->name);
    printf("\nBirth_date   : %s",b->birthdate);
    printf("\nClass        : %s",b->cls);
    printf("\nSemester     : %s",b->semester);
    printf("\nCGPA         : %0.2f",b->cgpa);
    printf("\n_____________________________________");
}

int main(){

    struct student *b1;
    scanf("%s",&b1->id);
    scanf("%s",&b1->name);
    scanf("%s",&b1->birthdate);
    scanf("%s",&b1->cls);
    scanf("%s",&b1->semester);
    scanf("%f",&b1->cgpa);
    display(b1);
}
```

OUTPUT :


Experiment_1.c
Experiment_2.c
Experiment_3.c
Experiment_4.c
Experiment_1.c > ...
39
40 //Q2.Display Student information.
41
OUTPUT
DEBUG CONSOLE
TERMINAL
Code
PS C:\Users\sai\Desktop\dsa> cd "c:\Users\sai\Desktop\dsa\" ; if ($?) { gcc Experiment_1.c -o Experiment_1 } ; i
f ($?) { .\Experiment_1 }
2020BTECS00005
Sanket_Jadhav
27_Aug_2002
Second_Year_BTECH
3rd_sem
9.2
***** About Student *****
_____
Student ID : 2020BTECS00005
Name : Sanket_Jadhav
Birth_date : 27_Aug_2002
Class : Second_Year_BTECH
Semester : 3rd_sem
CGPA : 9.20
_____
Activate Windows
Go to Settings to activate Windows.

Data Structure Lab

Assignment No-2

Name : Sanket Shivaji Jadhav.

Prn: 2020BTECS00005

1. Program based on Arrays and Pointers in c .

   a. 1.C program to traverse the array and find the respective element at the given position and add n to that number

```c
#include<stdio.h>

void add(int *arr,int n,int size,int ad){
    for(int i=0;i<size;i++){
        if(i==n){
            arr[i]+=ad;
        }
    }
}

void traverse(int *arr,int size){
for(int i=0;i<size;i++){
    printf("%d ",arr[i]);
}printf("\n");
}

int main(){
    int arr[]={2,3,34,53,1,23,44,4};
    int size=sizeof(arr)/sizeof(arr[0]);
    int n,ad;
```

```
    printf("Enter the index of an element and Number to
be added\n");
    scanf("%d%d",&n,&ad);
    traverse(arr,size);
    add(arr,n,size,ad);
    traverse(arr,size);

    return 0;
}
```

OUTPUT :

b. To print sum of min and max element from the given range of an array

```
#include<stdio.h>

void traverse(int *arr,int size){
```

```c
for(int i=0;i<size;i++){
    printf("%d ",arr[i]);
}printf("\n");
}

int maxi(int arr[],int lb,int ub){
    int max=0;
    for(int i=lb;i<=ub;i++){
        if(arr[i]>max){
            max=arr[i];
        }}
        return max;
}

int min(int arr[],int lb,int ub){
    int mini=arr[lb];
    for(int i=lb+1;i<=ub;i++){
        if(arr[i]<=mini){
        mini=arr[i];
        }
    }
    return mini;
}

int main(){
    int arr[]={2,3,44,5,332,55,4,77,8,58,9,7};
    int size=sizeof(arr)/sizeof(arr[0]);
    int lb,ub;
    printf("Enter the lower and upper bound interms of
index\n");

    scanf("%d%d",&lb,&ub);
    traverse(arr,size);
    int m=maxi(arr,lb,ub);
```

```
    int n=min(arr,lb,ub);
    printf("Sum of min and max is: %d\n",m+n);

    return 0;
}
```

OUTPUT :

Data Structure Lab

Assignment No-3

Name : Sanket Shivaji Jadhav.

Prn: 2020BTECS00005

1. File handling and Command line argument in c .

a. 1.To print the data from given file

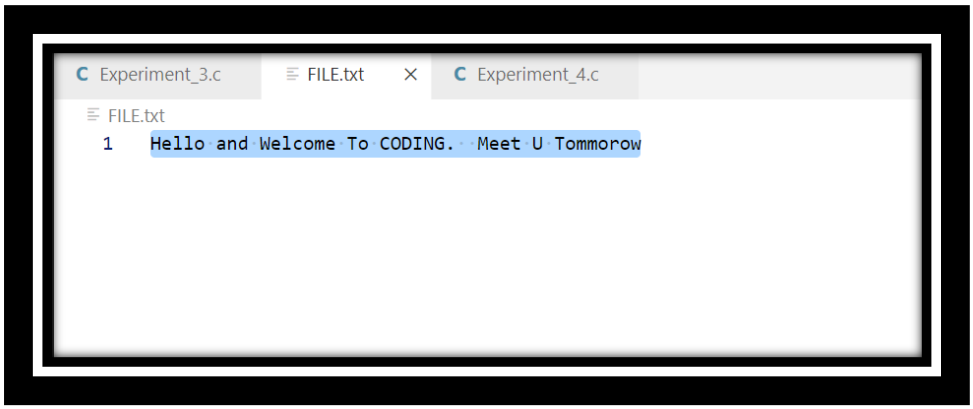
```c
#include<stdio.h>

int main(){
    FILE *fp;
    fp=fopen("FILE.txt","r");
    char c;

    while(1){
    c=fgetc(fp);
    if(c==EOF)
    break;

    printf("%c",c);
    }

    fclose(fp);
    return 0;
}
```

OUTPUT :

b.2.Writing into the file

```c
#include<stdio.h>

int main(){
    FILE *fp;
    fp=fopen("FILE.txt","w");

    fprintf(fp,"%s %s %s %s %s %s %s %s","Hello","and","Welcome","To","CODING."," Meet", "U", "Tommorow");
    return 0;
}
```

OUTPUT :


Experiment_3.c
FILE.txt
Experiment_4.c
FILE.txt
1 Hello and Welcome To CODING. Meet U Tommorow

Data Structure Lab

Assignment No-4

Name : Sanket Shivaji Jadhav.

Prn: 2020BTECS00005

1. Implementation of Recursion in C.

a.1. Factorial of a number

```c
#include<stdio.h>

int fact(int n){
    if(n==1 || n==0){
        return 1;
    }
    return n*fact(n-1);
}

int main(){
    int n=5;
    int a=fact(n);
    printf("Factorial of %d is: %d",n,a);
    return 0;
}
```

OUTPUT :

b. 2.Fibonacci Serires

```c
#include<stdio.h>

int fibo(int n){
    if(n<=1){
        return n;
    }
    return fibo(n-1)+fibo(n-2);
}

int main(){
    //1st ,2nd ,3rd ,4th ....
    //0  ,1   ,1  ,2  ,3  ,5  ,8
    int n=3;
    int a=fibo(n);
    printf("%d Element of Fibonacci series is: %d",n,a);
```

```
    return 0;
}
```

OUTPUT :