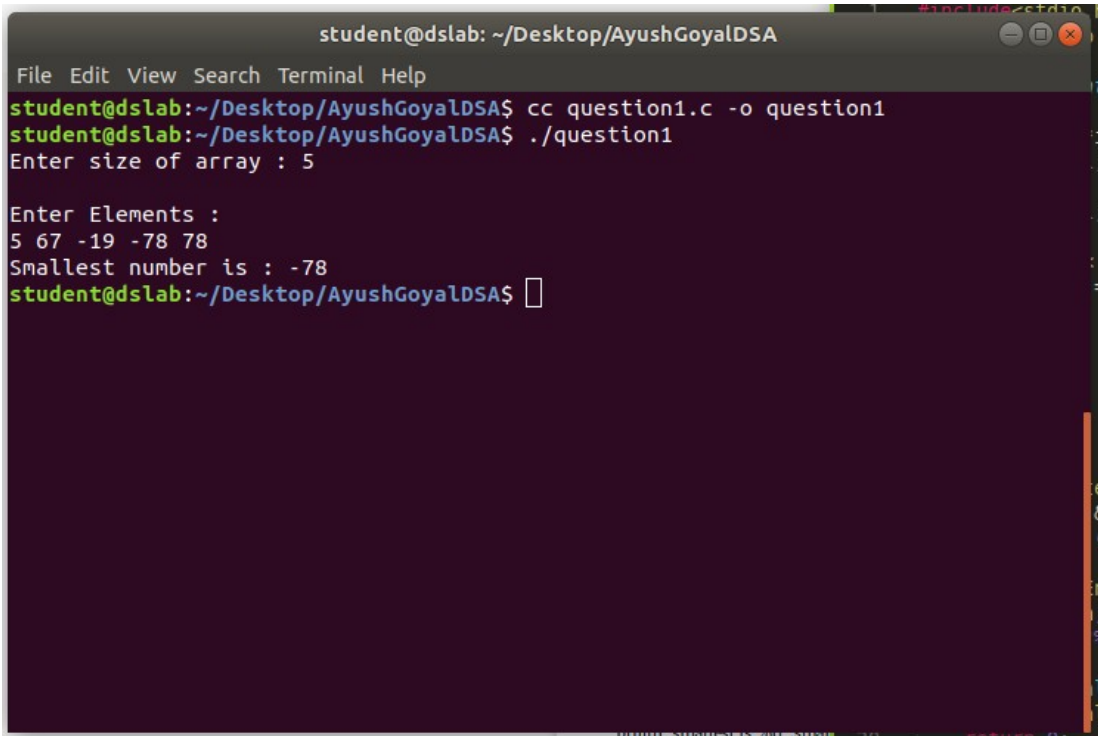
Ayush Goyal
190905522

DSA Lab 1

Q1)

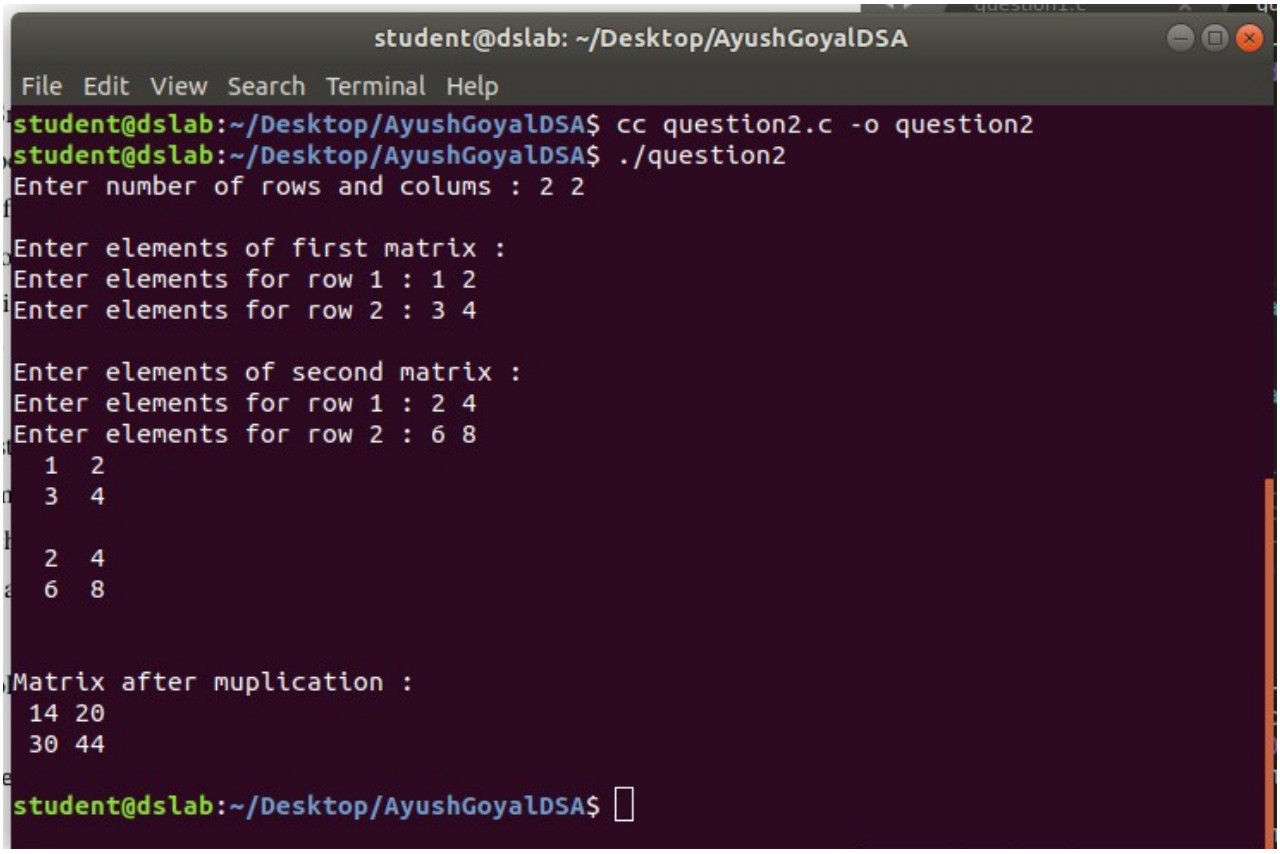
```
#include<stdio.h>
#include<stdlib.h>

int smallest(int* arr , int n)
{
	int *s,*l,*i;
	l = arr+n-1;
	s = arr;
	for(i=arr+1;i<=l;i++)
	{
		if(*i < *s)
			s  = i;
	}
	return *s;
}

int main()
{
	int n;
	printf("Enter size of array : ");
	scanf("%d",&n);
	int* arr = (int*)calloc(n,sizeof(int));
	int i;
	printf("\nEnter Elements : \n");
	for(i=0;i<n;i++){
		scanf("%d",&arr[i]);
	}
	int s = smallest(arr,n);
	printf("Smallest number is : %d\n",s);
	return 0;
}
```



Q2)

```
#include<stdio.h>
#include<stdlib.h>
void read(int **m, int r, int c){
	int i,j;
	printf("\n");
	for(i=0;i<r;i++){
		//*(*(m+i)+0) = c;
		printf("Enter elements for row %d : ",i+1);
		fflush(stdin);
		for(j=0;j<c;j++){
			scanf("%d",(*(m+i)+j));
		}
	}
}

void disp(int **m, int r, int c){
	int i,j;
	for(i=0;i<r;i++){
		for(j=0;j<c;j++){
			printf("%3d",*(*(m+i)+j));
		}
		printf("\n");
	}
	printf("\n");
}


void multiply(int **m1, int **m2, int r, int c){
	int **p = (int**)calloc(r+1,sizeof(int*));
	int i,j,k;
	for(i=0;i<r;i++){
		p[i] = (int*)calloc(c,sizeof(int));
	}
	p[i] = NULL;
	int sum=0;
   for(int i=0;i<r;i++){
		for(int j=0;j<c;j++){
			for(int k=0;k<r;k++){
				sum+=(m1[i][k]*m2[k][j]);
			}
			p[i][j]=sum;
			sum=0;
		}
	}

	printf("\nMatrix after muplication : \n");
	disp(p,r,c);
}
```

```
int main()
{
	int **mat1,**mat2;
	int r,c,i;
	printf("Enter number of rows and colums : ");
	scanf("%d %d",&r,&c);
	mat1 = (int **)calloc(r+1,sizeof(int*));
	mat2 = (int **)calloc(r+1,sizeof(int*));
	for(i=0;i<r;i++)
	{
		mat1[i] = (int *)calloc(c,sizeof(int));
		mat2[i] = (int *)calloc(c,sizeof(int));
	}
	mat1[i] = NULL;
	mat2[i] = NULL;

	printf("\nEnter elements of first matrix : ");
	read(mat1,r,c);
	printf("\nEnter elements of second matrix : ");
	read(mat2,r,c);
	disp(mat1,r,c);
	disp(mat2,r,c);
	multiply(mat1,mat2,r,c);
	return 0;
}
```



Q3)

```
#include <stdio.h>

struct DOB {
	int date, month, year;
};

struct ADRS {
	int house_no;
	long zipcode;
	char state[20];
};

struct EMPLOYEE {
	char name[20];
	struct DOB dob;
	struct ADRS address;
};

void read(struct EMPLOYEE* e){
	printf("\nEnter Employee Details : \n");
	printf("Name : ");
	scanf("%s",e->name);
	printf("DOB (dd mm yyyy): ");
	scanf("%d %d %d",&(e->dob.date),&(e->dob.month),&(e->dob.year));
	printf("Address : \n House No.:");
	scanf("%d",&(e->address.house_no));
	printf("Zipcode : ");
	scanf("%ld",&(e->address.zipcode));
	printf("State : ");
	scanf("%s",e->address.state);
}

void disp(struct EMPLOYEE* e){
	printf("\nName : %s \nDOB : %d/%d/%d \nAddress : %d , %s , %ld\n\n", e->name,e-
>dob.date,e->dob.month,e->dob.year,e->address.house_no,e->address.state,e->address.zipcode);
}

int main()
{
	int n,i;
	struct EMPLOYEE emp[10];
	struct EMPLOYEE* ptr = emp;

	printf("Enter number of employees : ");
	scanf("%d",&n);

	for(i=0;i<n;i++){
		read(ptr+i);
	}
	printf("\n\nAll the details are : \n\n");
```

```
        for(i=0;i<n;i++){
                disp(ptr+i);
        }
        return 0;
}
```