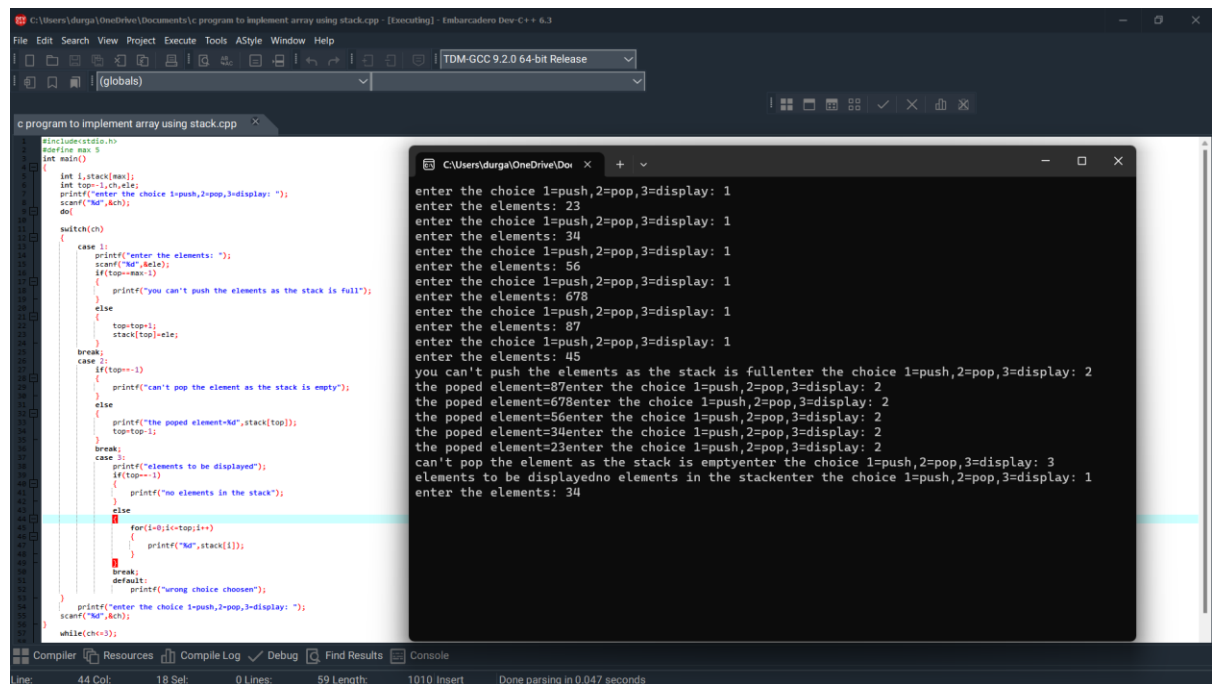


Day-3

Data Structures Programs

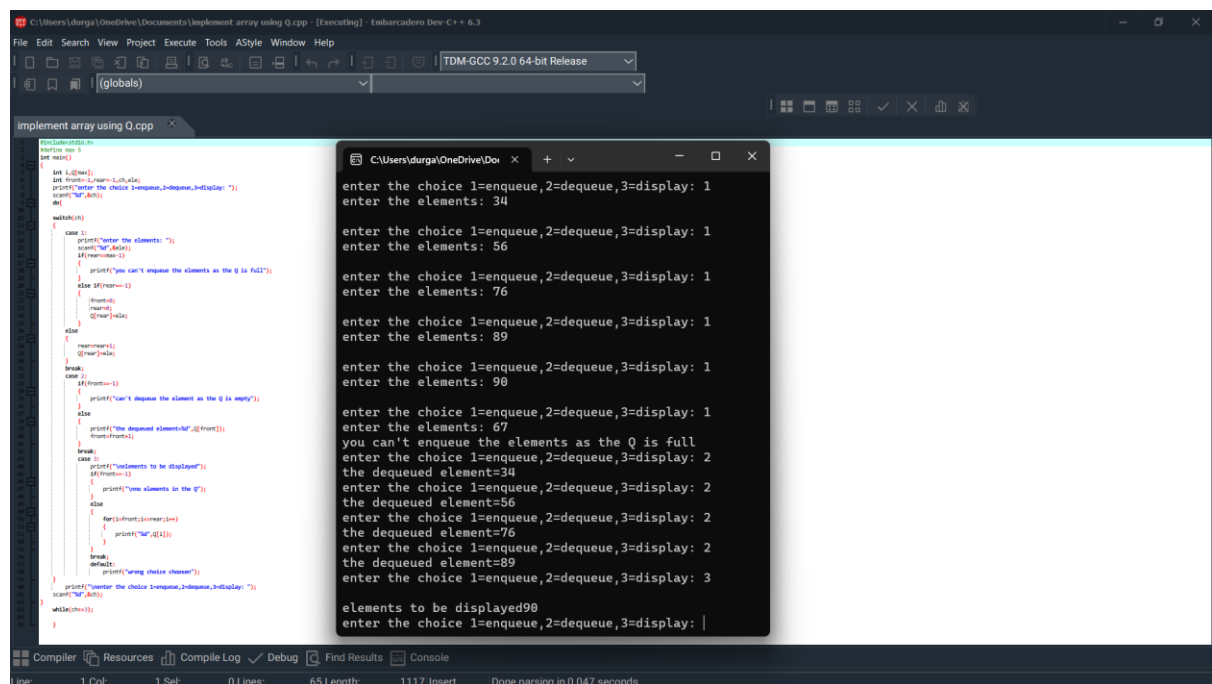
1)implement array using stack



```
#include<iostream.h>
using namespace std;
#define max 5
int main()
{
    int i,stack[max];
    int top=-1,ch,e;
    printf("enter the choice 1=push,2=pop,3=display: ");
    scanf("%d",&ch);
    do{
        switch(ch)
        {
            case 1:
                printf("enter the elements: ");
                scanf("%d",&e);
                if(top==max-1)
                {
                    printf("you can't push the elements as the stack is full");
                }
                else
                {
                    top++;
                    stack[top]=e;
                }
                break;
            case 2:
                if(top==0)
                {
                    printf("can't pop the element as the stack is empty");
                }
                else
                {
                    printf("the popped element=%d",stack[top]);
                    top--;
                }
                break;
            case 3:
                printf("elements to be displayed");
                if(top==0)
                {
                    printf("no elements in the stack");
                }
                else
                {
                    for(i=0;i<=top;i++)
                    {
                        printf("%d",stack[i]);
                    }
                }
                break;
            default:
                printf("wrong choice chosen");
        }
        printf("enter the choice 1=push,2=pop,3=display: ");
        scanf("%d",&ch);
    }while(ch>3);
}
```

enter the choice 1=push,2=pop,3=display: 1
enter the elements: 23
enter the choice 1=push,2=pop,3=display: 1
enter the elements: 34
enter the choice 1=push,2=pop,3=display: 1
enter the elements: 56
enter the choice 1=push,2=pop,3=display: 1
enter the elements: 678
enter the choice 1=push,2=pop,3=display: 1
enter the elements: 87
enter the choice 1=push,2=pop,3=display: 1
enter the elements: 45
you can't push the elements as the stack is full
enter the choice 1=push,2=pop,3=display: 2
the popped element=678
enter the choice 1=push,2=pop,3=display: 2
the popped element=56
enter the choice 1=push,2=pop,3=display: 2
the popped element=34
enter the choice 1=push,2=pop,3=display: 2
the popped element=23
enter the choice 1=push,2=pop,3=display: 2
can't pop the element as the stack is empty
enter the choice 1=push,2=pop,3=display: 3
elements to be displayed
no elements in the stack
enter the choice 1=push,2=pop,3=display: 1
enter the elements: 34

2)implement array using Queue



```
#include<iostream.h>
using namespace std;
int main()
{
    int i,q[100];
    int front=-1,rear=-1,ch,e;
    printf("enter the choice 1=enqueue,2=dequeue,3=display: ");
    scanf("%d",&ch);
    do{
        switch(ch)
        {
            case 1:
                printf("enter the elements: ");
                scanf("%d",&e);
                if(front==rear)
                {
                    printf("you can't enqueue the elements as the q is full");
                }
                else if(front==0)
                {
                    rear++;
                    q[rear]=e;
                }
                else
                {
                    rear++;
                    q[rear]=e;
                }
                break;
            case 2:
                if(front==0)
                {
                    printf("can't dequeue the element as the q is empty");
                }
                else
                {
                    printf("the dequeued element=%d",q[front]);
                    front++;
                }
                break;
            case 3:
                printf("elements to be displayed");
                if(front==0)
                {
                    printf("no elements in the q");
                }
                else
                {
                    for(i=front;i<=rear;i++)
                    {
                        printf("%d",q[i]);
                    }
                }
                break;
            default:
                printf("wrong choice chosen");
        }
        printf("enter the choice 1=enqueue,2=dequeue,3=display: ");
        scanf("%d",&ch);
    }while(ch>3);
}
```

enter the choice 1=enqueue,2=dequeue,3=display: 1
enter the elements: 34
enter the choice 1=enqueue,2=dequeue,3=display: 1
enter the elements: 56
enter the choice 1=enqueue,2=dequeue,3=display: 1
enter the elements: 76
enter the choice 1=enqueue,2=dequeue,3=display: 1
enter the elements: 89
enter the choice 1=enqueue,2=dequeue,3=display: 1
enter the elements: 90
enter the choice 1=enqueue,2=dequeue,3=display: 1
enter the elements: 67
you can't enqueue the elements as the Q is full
enter the choice 1=enqueue,2=dequeue,3=display: 2
the dequeued element=34
enter the choice 1=enqueue,2=dequeue,3=display: 2
the dequeued element=56
enter the choice 1=enqueue,2=dequeue,3=display: 2
the dequeued element=76
enter the choice 1=enqueue,2=dequeue,3=display: 2
the dequeued element=89
enter the choice 1=enqueue,2=dequeue,3=display: 3
elements to be displayed
90
enter the choice 1=enqueue,2=dequeue,3=display: |