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Reg_no – 2020BIT037

Assignment N0 – 1

1) Stack

```
// program using stack
#include <iostream>
using namespace std;
int stack[100], n=100, top=-1;
void push(int val) {
    if(top>=n-1)
        cout<<"Stack Overflow"<<endl;
    else {
        top++;
        stack[top]=val;
    }
}
void pop() {
    if(top<=-1)
        cout<<"Stack Underflow"<<endl;
    else {
        cout<<"The popped element is "<< stack[top]
        <<endl;
        top--;
    }
}
void display() {
```

```

if(top>=0) {
    cout<<"Stack elements are:";
    for(int i=top; i>=0; i--)
        cout<<stack[i]<<" ";
    cout<<endl;
} else
    cout<<"Stack is empty";
}

int main() {
    int ch, val;
    cout<<"1) Push in stack"<<endl;
    cout<<"2) Pop from stack"<<endl;
    cout<<"3) Display stack"<<endl;
    cout<<"4) Exit"<<endl;
    do {
        cout<<"Enter choice: "<<endl;
        cin>>ch;
        switch(ch) {
            case 1: {
                cout<<"Enter value to be pushed:"<<endl;
                cin>>val;
                push(val);
                break;
            }
            case 2: {
                pop();
                break;
            }
            case 3: {
                display();
                break;
            }
            case 4: {
                cout<<"Exit"<<endl;
                break;
            }
        }
    } while(ch != 4);
}

```

```

    }
    default: {
        cout<<"Invalid Choice"<<endl;
    }
}
}while(ch!=4);
return 0;
}

```

main.cpp

```

1 // program using stack
2 #include <iostream>
3 using namespace std;
4 int stack[100], n=100, top=-1;
5 void push(int val) {
6     if(top>=n-1)
7         cout<<"Stack Overflow"<<endl;
8     else {
9         top++;
10        stack[top]=val;
11    }
12 }
13 void pop() {
14     if(top<=-1)
15         cout<<"Stack Underflow"<<endl;
16     else {
17         cout<<"The popped element is "<< stack[top] <<endl;
18         top--;
19     }
20 }
21 void display() {
22     if(top>=0) {
23         cout<<"Stack elements are:";
24         for(int i=top; i>=0; i--)
25             cout<<stack[i]<<" ";
26         cout<<endl;
27     } else
28         cout<<"Stack is empty";
29 }
30 int main() {
31     int ch, val;
32     cout<<"1) Push in stack"<<endl;
33     cout<<"2) Pop from stack"<<endl;
34     cout<<"3) Display stack"<<endl;
35     cout<<"4) Exit"<<endl;

```

```
int main() {
    int ch, val;
    cout<<"1) Push in stack"<<endl;
    cout<<"2) Pop from stack"<<endl;
    cout<<"3) Display stack"<<endl;
    cout<<"4) Exit"<<endl;
    do {
        cout<<"Enter choice: "<<endl;
        cin>>ch;
        switch(ch) {
            case 1: {
                cout<<"Enter value to be pushed:"<<endl;
                cin>>val;
                push(val);
                break;
            }
            case 2: {
                pop();
                break;
            }
            case 3: {
                display();
                break;
            }
            case 4: {
                cout<<"Exit"<<endl;
                break;
            }
            default: {
                cout<<"Invalid Choice"<<endl;
            }
        }
    }while(ch!=4);
    return 0;
}
```

1) Push in stack
2) Pop from stack
3) Display stack
4) Exit
Enter choice:
3
Stack is emptyEnter choice:
2
Stack Underflow
Enter choice:
5
Invalid Choice
Enter choice:
3
Stack is emptyEnter choice:
4
Exit

2) Queue

```
// program using queue
#include <iostream>
using namespace std;
int queue[100], n = 100, front = - 1, rear = - 1;
void Insert() {
    int val;
    if (rear == n - 1)
        cout<<"Queue Overflow"<<endl;
    else {
        if (front == - 1)
            front = 0;
        cout<<"Insert the element in queue : "<<endl;
        cin>>val;
        rear++;
        queue[rear] = val;
    }
}
void Delete() {
```

```

        if (front == - 1 || front > rear) {
            cout<<"Queue Underflow ";
            return ;
        } else {
            cout<<"Element deleted from queue is : "<<
queue[front] <<endl;
            front++;
        }
    }
}

void Display() {
    if (front == - 1)
        cout<<"Queue is empty"<<endl;
    else {
        cout<<"Queue elements are : ";
        for (int i = front; i <= rear; i++)
            cout<<queue[i]<<" ";
        cout<<endl;
    }
}

int main() {
    int ch;
    cout<<"1) Insert element to queue"<<endl;
    cout<<"2) Delete element from queue"<<endl;
    cout<<"3) Display all the elements of queue"<<endl;
    cout<<"4) Exit"<<endl;
    do {
        cout<<"Enter your choice : "<<endl;
        cin>>ch;
        switch (ch) {
            case 1: Insert();
                break;
            case 2: Delete();
                break;
            case 3: Display();
                break;
        }
    } while (ch != 4);
}

```

```

        case 4: cout<<"Exit"<<endl;
        break;
        default: cout<<"Invalid choice"<<endl;
    }
} while(ch!=4);
return 0;
}

```

```

main.cpp
1 // program using queue
2 #include <iostream>
3 using namespace std;
4 int queue[100], n = 100, front = - 1, rear = - 1;
5 void Insert() {
6     int val;
7     if (rear == n - 1)
8         cout<<"Queue Overflow"<<endl;
9     else {
10         if (front == - 1)
11             front = 0;
12         cout<<"Insert the element in queue : "<<endl;
13         cin>>val;
14         rear++;
15         queue[rear] = val;
16     }
17 }
18 void Delete() {
19     if (front == - 1 || front > rear) {
20         cout<<"Queue Underflow ";
21         return ;
22     } else {
23         cout<<"Element deleted from queue is : "<< queue[front] <<endl;
24         front++;
25     }
26 }
27 void Display() {
28     if (front == - 1)
29         cout<<"Queue is empty"<<endl;
30     else {
31         cout<<"Queue elements are : ";
32         for (int i = front; i <= rear; i++)
33             cout<<queue[i]<<" ";
34         cout<<endl;
35     }
}

```

```

void Display() {
    if (front == - 1)
        cout<<"Queue is empty"<<endl;
    else {
        cout<<"Queue elements are : ";
        for (int i = front; i <= rear; i++)
            cout<<queue[i]<<" ";
        cout<<endl;
    }
}

int main() {
    int ch;
    cout<<"1) Insert element to queue"<<endl;
    cout<<"2) Delete element from queue"<<endl;
    cout<<"3) Display all the elements of queue"<<endl;
    cout<<"4) Exit"<<endl;
    do {
        cout<<"Enter your choice : "<<endl;
        cin>>ch;
        switch (ch) {
            case 1: Insert();
                break;
            case 2: Delete();
                break;
            case 3: Display();
                break;
            case 4: cout<<"Exit"<<endl;
                break;
            default: cout<<"Invalid choice"<<endl;
        }
    } while(ch!=4);
    return 0;
}

```

```

1) Insert element to queue
2) Delete element from queue
3) Display all the elements of queue
4) Exit
Enter your choice :
3
Queue is empty
Enter your choice :
4
Exit

```