LAB 8

```
// Stack
#include <stdio.h>
#include <stdlib.h>
struct node {
    int data;
    struct node *next;
};
struct node *top = NULL;

void push() {
    struct node *new_node;
    new_node = (struct node*) malloc (sizeof(struct node));
    printf("Enter element ");
    scanf("%d", &new_node->data);
    new_node->next = NULL;
    if (top == NULL)
        top = new_node;
    else {
        new_node->next = top;
        top = new_node;
    }
}
void pop() {
    if (top == NULL)
        printf("Stack empty");
    else {
        printf("Deleted element: %d\n", top->data);
        top = top->next;
    }
}
```

```
void display (){
    struct node * temp;
    if ( top == NULL)
        printf (" Stack empty ");
    else {
        temp= top;
        while (temp != NULL){
            printf ("%d\t", temp->data);
            temp = temp -> next;
        }
    }
}

void main (){
    int ch;
    do{
        printf ("1. Push\n2. Pop\n3. Display\n4. Exit\n Enter choice :");
        scanf ("%d", &ch);
        switch (ch){
            case 1 : push(); break;
            case 2: pop (); break;
            case 3: display(); break;
        }
    }while (ch != 4);
}
```

// QUEUE

```
#include <stdio.h>
#include <stdlib.h>
struct node {
    int data;
    struct node *next;
};
struct node *front = NULL, *rear = NULL;

void insert () {
    struct node* new_node;
    new_node = (struct node *) malloc( sizeof(struct node));
    printf("Enter element: ");
    scanf("%d", &new_node->data );
    new_node -> next = NULL;
    if( rear == NULL){
        rear = new_node;
        front = new_node;
    }
    else {
        rear -> next = new_node;
        rear = new_node;
    }
}
void del(){
  if (front == NULL)
      printf("Queue empty");
  else{
      printf("Deleted element: %d\n", front->data);
      front = front -> next;
  }
}
```

```
void display () {
    struct node * temp;
    if (front == NULL)
        printf ("Queue empty");
    else {
        temp = front;
        while (temp != NULL){
            printf ("%d\t", temp -> data);
            temp = temp -> next;
        }
    }
}
void main () {
    int ch;
    do {
        printf (1. Insert\n 2. Delete\n 3. Display\n 4. Exit\n Choice: ");
        scanf ("%d", &ch);
        switch (ch){
            case 1: insert (); break;
            case 2: del (); break;
            case 3: display (); break;
        }
    } while (ch != 4);
}
```