Lab program 3:

linear queue insertion and deletion

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

#define SIZE 5

int queue[SIZE];
int front = -1;
int rear = -1;



void enter (int value) {
   if ((front == 0 && rear == SIZE - 1) || (rear == (front - 1) % (SIZE - 1))) {
      printf("Queue is Full\n");
      return;
      }
      else if (front == -1) {
      front = rear = 0;
      queue[rear] = value;
       }
   else if (rear == SIZE - 1 && front != 0)
      {
      rear = 0;
      queue[rear] = value;
      }
   else {
      rear++;
      queue[rear] = value;
       }
```

```
    printf("Inserted %d\n", value);
}

void del() {
    if (front == -1) {
        printf("Queue is Empty\n");
        return;
    }

    printf("Deleted %d\n", queue[front]);
    queue[front] = -1;
    if (front == rear) {
        front = rear = -1;
        }
    else if (front == SIZE - 1) {
    front = 0;
    }
    else {
        front++;
    }
}

void display() {
    if (front == -1) {
        printf("Queue is Empty\n");
        return;
    }
    printf("Queue elements are: ");
    if (rear >= front) {
        for (int i = front; i <= rear; i++)
```

```
            printf("%d ", queue[i]);
    }
    else {
        for (int i = front; i < SIZE; i++)
            printf("%d ", queue[i]);
        for (int i = 0; i <= rear; i++)
            printf("%d ", queue[i]);
    }
    printf("\n");
}

int main() {
    int choice, value;
    while (1) {
        printf("\n1. Insert\n2. Delete\n3. Display\n4. Exit\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);
        switch (choice) {
            case 1:
                printf("Enter the value to insert: ");
                scanf("%d", &value);
                enter(value);
                break;
            case 2:
                del();
                break;
            case 3:
                display();
                break;
            case 4:
```

```
            exit(0);
        default:
            printf("Invalid choice\n");
      }
   }
   return 0;
}
```

```
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter the value to insert: 1
Inserted 1

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter the value to insert: 2
Inserted 2

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter the value to insert: 3
Inserted 3

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter the value to insert: 4
Inserted 4

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter the value to insert: 5
Inserted 5

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter the value to insert: 6
Queue is Full
```

```
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 3
Queue elements are: 1 2 3 4 5

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 2
Deleted 1

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 2
Deleted 2

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 2
Deleted 3

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 2
Deleted 4

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 2
Deleted 5

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 4
```