LAB - 4

1) Double ended Queue

```
# include <stdio.h>
# include <stdlib.h>
# define qsize 5
  int f=0, r=-1, ch;
  int item, q[10];
  int isfull()
     {
       return(r==qsize-1)?1:0;
      }
   int isempty()
      {
        return(f>r)?1:0;
       }
   void insert_rear()
       {
         if(isfull())
           {
             printf("Queue overflow\n");
              return;
           }
           r=r+1;
           q[r]=item;
           }
   void delete_front()
      {
        if(isempty())
        {
           printf("Queue empty\n");
           return;
```

```
        }
        printf(" Item deleted is %d \n", q[(f++)]);
        if(f>r)
          { f = 0;
            r = -1;
          }
      }
Void insert_front()
    {
     if(f!=0)
      {
        f = f-1;
        q[f] = item;
        return;
      }
    else
      printf(" insertion not possible \n");
    }
 Void delete_rear()
   {
    if(isempty())
     {
       printf(" queue is empty \n");
       return;
     }
     printf(" item deleted is %d \n", q[(r--)]);
     if(f>r)
       {
         f = 0;
         r = -1;
     }
  }
Void display()
```

```
{
 int i;
 if(iempty())
  { printf(" Queue empty \n");
    return;
  }
 for(i=f; i<=r; i++)
 printf(" %d \n", q[i]);
 }
void main()
 {
  for(;;)
   {
  printf(" 1. insert_rear \n 2. insert_front \n 3. delete_rear
         \n 4. delete_front \n 5. display \n 6. exit \n");
  printf(" enter choice \n");
  scanf(" %d", &ch);
   switch(ch)
     {
       case 1: printf(" enter the item \n");
               scanf(" %d ", &item);
               insert_rear();
               break;
      Case 2: printf(" enter the item \n");
               Scanf(" %d ", &item);
               insert_front();
               break;
     Case 3: delete_rear();
             break;
```

```
        case 4 : delete_front()
                 break;
        case 5 : display()
                 break;
        default : exit(0);
    }
}
```