**Programs**

1. Write a program to implement double ended queue (dequeuer) using arrays.

Ans:

#include<stdio.h>

#include<conio.h>

#include<stdlib.h>

#define size 5

int deque[size];

int f=-1,r=-1;

void insert\_front(int x)

{

if((f==0&&r==size-1)||(f==r+1))

{

printf("Overflow..");

}

else if((f==-1)&&(r==-1))

{

f=r=0;

deque[f]=x;

printf("Element inserted successfully..");

}

else if(f==0)

{

f=size-1;

deque[f]=x;

printf("Element inserted successfully..");

}

else

{

f=f-1;

deque[f]=x;

printf("Element inserted successfully..");

}

}

void insert\_rear(int x)

{

if((f==0&&r==size-1)||(f==r+1))

{

printf("Overflow..");

}

else if((f==-1)&&(r==-1))

{

r=0;

deque[r]=x;

printf("Element inserted successfully..");

}

else if(r==size-1)

{

r=0;

deque[r]=x;

printf("Element inserted successfully..");

}

else

{

r++;

deque[r]=x;

printf("Element inserted successfully..");

}

}

void display()

{

int i=f;

printf("Elements in dequeue are:\n");

while(i!=r)

{

printf("%d\t",deque[i]);

i=(i+1)%size;

}

printf("%d",deque[r]);

}

void getfront()

{

if((f==-1)&&(r==-1))

{

printf("Deque is empty..");

}

else

{

printf("The element at front is: %d ",deque[f]);

}

}

void getrear()

{

if((f==-1)&&(r==-1))

{

printf("Deque is empty..");

}

else

{

printf("The element at rear is %d ", deque[r]);

}

}

void delete\_front()

{

if((f==-1)&&(r==-1))

{

printf("Deque is empty..");

}

else if(f==r)

{

printf("The deleted element is %d ", deque[f]);

f=-1;

r=-1;

}

else if(f==(size-1))

{

printf("The deleted element is %d ", deque[f]);

f=0;

}

else

{

printf("The deleted element is %d ", deque[f]);

f=f+1;

}

}

void delete\_rear()

{

if((f==-1)&&(r==-1))

{

printf("Deque is empty..");

}

else if(f==r)

{

printf("The deleted element is %d ", deque[r]);

f=-1;

r=-1;

}

else if(r==0)

{

printf("The deleted element is %d ", deque[r]);

r=size-1;

}

else

{

printf("The deleted element is %d ", deque[r]);

r=r-1;

}

}

void main()

{

int ch,x;

clrscr();

while(1)

{

printf("\n-------------------------------Menu-----------------------------------");

printf("\n1.Insert from front \t2.Insert from rear \t3.Delete from front");

printf("\n4.Delete from rear \t5.Get rear \t6.Get front \t7.Display");

printf("\n8.Exit");

printf("\n----------------------------------------------------------------------");

printf("\nEnter your choice:");

scanf("%d",&ch);

switch(ch)

{

case 1:printf("Enter number:");

scanf("%d",&x);

insert\_front(x);

break;

case 2:printf("Enter number:");

scanf("%d",&x);

insert\_rear(x);

break;

case 3:delete\_front();

break;

case 4:delete\_rear();

break;

case 5:getrear();

break;

case 6:getfront();

break;

case 7:display();

break;

case 8:exit(0);

default: printf("Invalid choice..");

}

}

}

Output:





