11/1/24

Weekly Lab-3

1. // circular queue.

```
#include <stdio.h>
#include <stdlib.h>
#define max 10
int rear = -1;
int front = -1;
int q[max];
int isfull()
{
    if (front == rear+1 || front == 0 && rear == max-1)
        return 1;
    return 0;
}
int isempty()
{
    if (front == -1 && rear == -1)
        return 1;
    return 0;
}
void enqueue (int x)
{
    if (isfull())
    {
        printf ("overflow \t");
    }
    else if (front == -1 && rear == -1)
    {
        front = 0;
        rear = 0;
    }
    else {
        rear = (rear+1) % max;
    }
    q[rear] = x;
```

```
int dequeue()
{
    int value=-1;
    if (is_empty())
    {
        printf("underflow\t");
        return-1;
    }
    else
    {
        value=q[front];
        if(front==rear)
        {
            front=-1;
            rear=-1;
        }
        else{
            front=(front+1)%max;
        }
        return value;
    }
}
void display()
{
    int i;
    if(is_empty())
    {
        printf("underflow\t");
    }
    else{
        printf("elements are:");
        for(i=front;i!=rear;i=(i+1)%max)
```

```
        {
            printf("%d\t",q[c]);
        }
    printf("%d",q[i]);
}
void main()
{
    int c,no,x;
    while(1)
    {
        printf("enter 1for insert 2for delete 3for display 4for exit\n");
        printf("enter the choice:");
        scanf("%d",&c);
        switch(c)
        {
            case 1: printf("enter the no:");
                    scanf("%d",&no);
                    enqueue(no);
                    break;
            case 2: x=dequeque();
                    if(x!=-1)
                        printf("%d is popped\n",x);
                    break;
            case 3: display();
                    break;
            case 4: exit(0);
            default: printf("invalid\n");
                     break;
        }
    }
}
```

Output

enter 1 for insert 2for delete 3for display 4 for exit

enter the choice : 1

enter the no:10

enter 1 for insert 2 for delete 3 for display 4 for exit

enter the choice: 1

enter the no:20

enter 1 for insert 2 for delete 3 for display 4 for exit

enter the choice: 3

elements are: 10 20 enter 1 for insert 2 for delete 3 for display 4 for exit

enter the choice: 2

10 is popped

enter 1 for insert 2 for delete 3 for display 4 for exit

enter the choice: 2

20 is popped

enter 1 for insert 2 for delete 3 for display 4 for exit

enter the choice: 2

underflow enter 1 for insert 2 for delete 3 for display 4 for exit

enter the choice: 4.

2) Linked list

```
#include <stdio.h>
#include <stdlib.h>
#define max 10
int q[max];
int front = -1;
int rear = -1
struct node
{
    int data;
    struct node *next;
} * first = NULL;
void insert(struct node ** p, int pos, int no)
{
```

```
struct node *t, *temp;
z = (struct node *) malloc (sizeof (struct node));
t -> data = no;
if (pos == 0)
{
    z -> next = *p;
    *p = z;
}
else
{
    struct node *temp = *p;
    for (int i = 1; i < pos && (p != NULL); i++)
        temp = temp -> next;
    t -> next = temp -> next;
    temp -> next = z;
}
}
void display (struct node *p)
{
    printf ("elements are: ");
    while (p != NULL)
    {
        printf ("%d \t", p -> data);
        p = p -> next;
    }
}
void main ()
{
    int c, n, p;
    while (1)
    {
        printf ("enter 1. insert 2. display 3. exit");
```

```
printf("enter the choice:");
scanf("%d",&c);
switch(c)
{
    case 1: printf("enter the pos and number:");
            scanf("%d%d",&p,&n);
            insert(&first,p,n);
            break;
    case 2: display(first);
            break;
    case 3: exit(0);
    default: printf("invalid input:");
             break;
  }
}
```

O/P

enter 1. insert 2. display 3. exit enter the choice: 1
enter the pos and number: 0 11
enter 1. insert 2. display 3. exit enter the choice: 1
enter the pos and number: 1 12
enter 1. insert 2. display 3. exit enter the choice: 2.
elements are: 11 12 enter 1. insert 2. display 3. exit
enter the choice: 1
enter the pos and number: 0 13
enter 1. insert 2. display 3. exit enter the choice: 2
elements are: 13 11 12 enter 1. insert 2. display 3. exit
enter the choice: 3

Sp.T
11/1/24