Assignment 6 | 9th January 2021

Question 1

Write a program implementing insert, delete and display operation of Circular Queue.

```
#include <iostream>
#define MAX 5
using namespace std;

class Circular_Queue
{
   private:
      int *cqueue_arr;
      int front, rear;
   public:
      Circular_Queue()
      {
         cqueue_arr = new int [MAX];
         rear = front = -1;
      }

      void insert(int item)
      {
         if ((front == 0 && rear == MAX-1) || (front == rear+1))
         {
            cout<<"Queue Overflow \n";
            return;
         }
         if (front == -1)
         {
            front = 0;
            rear = 0;
         }
         else
         {
```

```
        if (rear == MAX - 1)
            rear = 0;
        else
            rear = rear + 1;
    }
    cqueue_arr[rear] = item ;
}

void del()
{
    if (front == -1)
    {
        cout<<"Queue Underflow\n";
        return ;
    }
    cout<<"Element deleted from queue is : "<<cqueue_arr[front]<<endl;
    if (front == rear)
    {
        front = -1;
        rear = -1;
    }
    else
    {
        if (front == MAX - 1)
            front = 0;
        else
            front = front + 1;
    }
}

void display()
{
    int front_pos = front, rear_pos = rear;
    if (front == -1)
    {
        cout<<"Queue is empty\n";
        return;
    }
    cout<<"Queue elements :\n";
    if (front_pos <= rear_pos)
    {
        while (front_pos <= rear_pos)
        {
```

```
            cout<<cqueue_arr[front_pos]<<" ";
            front_pos++;
         }
      }
      else
      {
         while (front_pos <= MAX - 1)
         {
            cout<<cqueue_arr[front_pos]<<" ";
            front_pos++;
         }
         front_pos = 0;
         while (front_pos <= rear_pos)
         {
            cout<<cqueue_arr[front_pos]<<" ";
            front_pos++;
         }
      }
      cout<<endl;
   }
};

int main()
{
   int choice, item;
   Circular_Queue cq;
   do
   {
      cout<<"1.Insert\n";
      cout<<"2.Delete\n";
      cout<<"3.Display\n";
      cout<<"4.Quit\n";
      cout<<"Enter your choice : ";
      cin>>choice;
      switch(choice)
      {
      case 1:
         cout<<"Input the element for insertion in queue : ";
         cin>>item;
         cq.insert(item);
      break;
   case 2:
         cq.del();
```

```
      break;
      case 3:
         cq.display();
      break;
   case 4:
      break;
   default:
      cout<<"Wrong choice\n";
   }
   }
   while(choice != 4);
   return 0;
}
```

Question 2

A Barua number is a number which consists of only zeroes and ones and has only one 1. Barua number will start with 1. Given numbers, find out the multiplication of the numbers. Note: The input may contain one decimal number and all other Barua numbers. (Assume that each number is very large and total number of values give is also very large)

Code: -

```
#include<bits/stdc++.h>
using namespace std;
int multiply(int array1[], int n)
{
   int pro = 1;
   for (int i = 0; i < n; i++)
      pro = pro * array1[i];
   return pro;
}
int multi(int array2[], int n)
{
   int pro = 1;
   for (int i = 0; i < n; i++)
      pro = pro * array2[i];
   return pro;
}
int mul(int array3[], int n)
{
   int pro = 1;
```

```
    for (int i = 0; i < n; i++)
        pro = pro * array3[i];
    return pro;
}
int main()
{
    // 1st
    int array1[] = {100,10,12,1000};
    int a = sizeof(array1) / sizeof(array1[0]);
    cout << multiply(array1, a)<<endl;
    // 2nd
    int array2[] = {100,121,100000};
    int b = sizeof(array2) / sizeof(array2[0]);
    cout << multi(array2, b)<<endl;
    // 3rd
    int array3[] = {10,100,1000};
    int c = sizeof(array3) / sizeof(array3[0]);
    cout << mul(array3, c)<<endl;
    return 0;
}
```

Input 1: 100 10 12 1000

Output 1: 12000000

Input 2: 100 121 100000

Output 2: 1210000000

Input 3: 10 100 1000

Output 3: 1000000