/** *

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- Label: A04
- Title: circular array que
- Course: CMPS 2143
- Semester: Spring 2021
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- Description:

-
  ```
        This program creates a circular array from a que.
  ```
-
- Files: main.cpp: driver program
  **/

#include

using namespace std;

/**

- CircularArrayQue
-
- Description:

-
  ```
      Contains the constructor and commands to set size and fill array
  ```
-
- Public Methods:

-
  ```
      -            CircularArrayQue()
  ```

-
  ```
      -            CircularArrayQue(int size)
  ```

-
  ```
      - void       Push(int item)
  ```

-
  ```
  - int       Pop()
  ```
- Private Methods:

-
  ```
  - void      init(int size)
  ```

-
  ```
  - bool      full()
  ```

-
  ```
  -
  ```
- Usage:
-

-
  ```
  -within main enter in ythe values to fill the array with the push command
  ```

-
  ```
  (C1.push(#))
  ```
-

*/

class CircularArrayQue { private: int *Container; int Front; //Needed for to create a circular linked array int Rear; //Needed ... linked array int QueSize; // items in the queue int CurrentSize;
void init(int size = 0) { Front = Rear = CurrentSize = 0; QueSize = size; }

```
bool Full()
{
    return CurrentSize == QueSize;   //returns a true or false
}
```

public: CircularArrayQue() { Container = new int[10]; init(10); } CircularArrayQue(int size) { Container = new int[size]; init(size); }

```
void Push(int item)
{
```

```
    if (!Full())
    {
        Container[Rear] = item;
        Rear = (Rear + 1) % QueSize;
        CurrentSize++;
    }
    else
    {
        cout << "FULL!!!!" << endl;
    }
}

int Pop()
{
    int temp = Container[Front];
    Front = (Front + 1) % QueSize;
    CurrentSize--;
    return temp;
}
friend ostream &operator<<(ostream &os, const CircularArrayQue &other);
```

};

/** * Public/Private/Protected : ostream &operator<< * * Description: * Fills in the array? * * Params: * - Char ostream &os * - const CircularArrayQue * - & other * - and one line description * * Returns: * - what does this function return (including the type)? */ ostream &operator<<(ostream &os, const CircularArrayQue &other) {

```
for (int i = other.Front; i < other.CurrentSize; i = (i + 1) % other.QueSize)
{
    os << other.Container[i] << " ";
}
os << endl;
return os;
```

}

/**

- Main Driver
-
- For this program, the main driver was used to test the CircularArrayQue class
-

*/ int main() { CircularArrayQue C1(5);

```
// C1.Push(34);
// C1.Push(38);
```

```
    // C1.Push(44);
    // C1.Push(22);
    // C1.Push(99);
    // C1.Push(100);

    C1.Push(1);
    C1.Push(2);
    C1.Push(3);
    // C1.Push(6);
    // C1.Push(7);
    cout << C1 << endl;

    // C1.Push(1);
    // C1.Push(2);
    // C1.Push(3);

    cout << C1 << endl;
```

}