

Name: Raheel Nazir
Sap: 54513

Question #1:

```
#include <iostream>
using namespace std;

int n = 7;
int queue[n];
int queueFront = -1;
int queueBack = -1;

void offer(int value) {

    if (queueBack == n - 1) {
        cout << "Queue is full." << value << "." << endl;
    }

    if (queueFront == -1) {
        queueFront = 0;
    }

    queueBack++;
    queue[queueBack] = value;
    cout << value << " Added to queue." << endl;
}

void poll() {

    if (queueFront == -1 || queueFront > queueBack) {
        cout << "Queue is empty." << endl;
    }

    cout << queue[queueFront] << " Removed from queue." << endl;
    queueFront++;
}
```

```

    if (queueFront > queueBack) {
        queueFront = -1;
        queueBack = -1;
    }
}

void display() {
    if (queueFront == -1) {
        cout << "Queue is empty." << endl;
        return;
    }

    cout << "Queue elements: ";
    for (int i = queueFront; i <= queueBack; i++) {
        cout << queue[i] << " ";
    }
    cout << endl;
}

bool isEmpty() {
    if(queueFront == -1 ) {
        return true;
    } else {
        return false;
    }
}

int main() {
    offer(20);
    offer(40);
    offer(70);

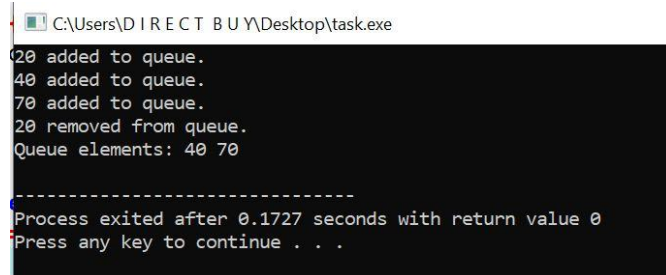
    poll();

    display();

    return 0;
}

```

Output:



```
C:\Users\DIRECTBUY\Desktop\task.exe
20 added to queue.
40 added to queue.
70 added to queue.
20 removed from queue.
Queue elements: 40 70

-----
Process exited after 0.1727 seconds with return value 0
Press any key to continue . . .
```

Question #2:

```
#include <iostream>
#include<string>
using namespace std;
```

```
int n = 7;
string queue[7];
int queueFront = -1;
int queueBack = -1;
```

```
string offer(string value) {
```

```
    if (queueBack == n - 1) {
        cout << "Queue is full." << value << "." << endl;
    }
```

```
    if (queueFront == -1) {
        queueFront = 0;
    }
```

```
    queueBack++;
    queue[queueBack] = value;
```

```

        cout << value << " added to queue." << endl;

        return value;
    }

int main() {

    string Q1 = offer("Data");
    string Q2 = offer("Structure");
        string Q3 = offer("and");
        string Q4 = offer("Algorithms");

        cout << endl << endl;

        cout << Q1 << " " << Q2 << " " << Q3 << " " << Q4 << endl;


    return 0;
}

```

Output:

 C:\Users\DIRECTBUY\Desktop\task.exe

```

Data added to queue.
Structure added to queue.
and added to queue.
Algorithms added to queue.

Data Structure and Algorithms

-----
Process exited after 0.1764 seconds with return value 0
Press any key to continue . . .

```