Stack and Queue

1. จงอธิบายการทำงานในแต่ละรอบของ queueตามคำสั่งดังต่อไปนี้

1 Queue q2(12);

2 q.enqueue(2);

3 q.enqueue(4);

4 q.enqueue(6);

5 cout << q.dequeue() << endl;

6 cout << q.dequeue() << endl;

7 q.enqueue(8);

8 q.enqueue(10);

9 q.enqueue(12);

10 cout << q.dequeue() << endl;

| Line | Head index | Tail index | Element in structure [0…11] | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 0 | -1 |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | 0 | 0 | 2 |  |  |  |  |  |  |  |  |  |  |  |
| 3 | 0 | 1 | 2 | 4 |  |  |  |  |  |  |  |  |  |  |
| 4 | 0 | 2 | 2 | 4 | 6 |  |  |  |  |  |  |  |  |  |
| 5 | 1 | 2 |  | 4 | 6 |  |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Console output …………………………………………………………………………………………………………………………………….

2. จงอธิบายการทำงานในแต่ละรอบของ queueตามคำสั่งดังต่อไปนี้

1 Queue q3(12);

2 q.enqueue(1);

3 q.enqueue(1);

4 q.enqueue(1);

5 q.enqueue(2);

6 q.enqueue(2);

7 q.enqueue(2);

8 cout << q.dequeue() << endl;

9 cout << q.dequeue() << endl;

10 cout << q.dequeue() << endl;

11 q.enqueue(3);

12 cout << q.dequeue() << endl;

| Line | Head index | Tail index | Element in structure [0…11] | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 0 | -1 |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Console output …………………………………………………………………………………………………………………………………….

3. จงอธิบายการทำงานในแต่ละรอบของ stackตามคำสั่งดังต่อไปนี้

1 Stack s2(6);

2 s.push(1);

3 s.push(10);

4 s.push(100);

5 cout << s.pop() << endl;

6 s.push(2);

8 s.push(20);

9 s.push(200);

10 cout << s.pop() << endl;

11 cout << s.pop() << endl;

12 cout << s.pop() << endl;

13 cout << s.pop() << endl;

| Line | Top index | Element in structure [0…6] | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | -1 |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 |  |  |  |  |  |  |  |  |  |  |  |  |  |

Console output …………………………………………………………………………………………………………………………………….

4. จงอธิบายการทำงานในแต่ละรอบของ stackตามคำสั่งดังต่อไปนี้

1 Stack s3(6);

2 s.push(1);

3 cout << s.pop() << endl;

4 s.push(2);

5 s.push(3);

6 cout << s.pop() << endl;

7 cout << s.pop() << endl;

8 s.push(2);

9 s.push(20);

10 s.push(200);

11 cout << s.pop() << endl;

12 cout << s.pop() << endl;

13 cout << s.pop() << endl;

| Line | Top index | Element in structure [0…6] | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | -1 |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 |  |  |  |  |  |  |  |  |  |  |  |  |  |

Console output …………………………………………………………………………………………………………………………………….

5. จงอธิบายความต่างของ Stack และ Queueสั้นๆ มา 2 ข้อ

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