Stack and Queue Exercises

1. Suppose that stack is an object of type DynIntStack that provides a typical stack implementation for integers. What is the output of the following code segment? Assume the inclusion of relevant header files.

```
int main()
{
       int catchVar;
       DynIntStack stack;
       catchVar = 5;
       stack.push(catchVar);
       stack.push(10);
       stack.push(15);
       stack.pop(catchVar);
       stack.pop(catchVar);
       cout << catchVar << endl;
       stack.push(10);
       stack.push(catchVar);
       cout << catchVar << endl;
    while (!stack.isEmpty())
    {
       stack.pop(catchVar);
        cout << catchVar << endl;
    }
       system("PAUSE");
       return 0;
}
```

Answer:

2. Suppose that stack is an object of type DynIntStack that provides a typical stack implementation for integers. What is the output of the following code segment? Assume the inclusion of relevant header files.

```
int main()
{
       stackType<int> stack;
        int x = 9;
        int y = 0;
        stack.push(3);
        stack.push(4);
        stack.push(x);
        stack.push(x+2);
        y = stack.top();
        stack.pop();
        stack.push(x+y+3);
        stack.push(y-2);
        stack.push(8);
        x = stack.top();
        stack.pop();
        cout << "x= " << x << endl;
        cout << "y= " << y << endl;
           while (!stack.isEmptyStack())
           {
              cout << stack.top() << endl;
              stack.pop();
           }
        return 0;
}
```

Answer:

3. Suppose that queue is an object of type DynIntQueue that provides a typical queue implementation for integers. What is the output of the following code segment? Assume the inclusion of relevant header files.

```
int main()
{
       int catchVar;
       DynIntQueue iqueue;
       catchVar = 5;
       iqueue.enqueue(catchVar);
       iqueue.enqueue (10);
       iqueue.enqueue (15);
       iqueue.dequeue (catchVar);
       cout << catchVar << endl;
       iqueue.dequeue (catchVar);
       cout << catchVar << endl;
       iqueue.enqueue (10);
       iqueue.enqueue (catchVar);
       cout << catchVar << endl;
    while (!iqueue.isEmpty())
    {
       iqueue.dequeue(catchVar);
        cout << catchVar << endl;
    }
       system("PAUSE");
       return 0;
}
```

Answer:

4. Suppose that queue is an object of type DynIntQueue that provides a typical queue implementation for integers. What is the output of the following code segment? Assume the inclusion of relevant header files.

```
int main()
{
       DynIntQueue iqueue;
        int x = 9;
        int y = 0;
        iqueue.enqueue (3);
        iqueue.enqueue (4);
        iqueue.enqueue (x);
        iqueue.enqueue (x+2);
        iqueue.dequeue(y);
        iqueue.enqueue (x+y+3);
        iqueue.enqueue (y-2);
        iqueue.enqueue (8);
        iqueue.dequeue(x);
        cout << "x= " << x << endl;
        cout << "y= " << y << endl;
        while (!iqueue.isEmpty())
        {
          iqueue.dequeue(x);
          cout << x << endl;
        }
        system("PAUSE");
        return 0;
}
```

Answer: