**Lab06: Stacks**

**Question 1**

Assume the stack can only support a maximum of 10 elements. Given the following operations, draw the stack for each operation below:

* 1. Perform PUSH operations on 1, 2 and 3.

top

|  |
| --- |
| 3 |
| 2 |
| 1 |

* 1. Two POP operations are performed.

top

|  |
| --- |
| 1 |

* 1. Perform PUSH operations on 9, 8, and 7.

top

|  |
| --- |
| 7 |
| 8 |
| 9 |
| 1 |

* 1. Three POP operations are performed.

top

|  |
| --- |
| 1 |

**Question 2**

Using the following definition of a stack.

struct Node {

int data;

struct Node \*Next;

};

* 1. Declare a pointer variable called Top of type Node.

Node\* top = new Node;

* 1. Initialize the stack.

top = NULL;

* 1. Implement the push() function, which signature appears below, so that the integer x is added onto the top of the stack.

void push( int x);

void push(int x) {

Node\* newNode = new Node;

newNode->data = x;

newNode->Next = top;

top = newNode;

}

* 1. Implement the function pop(), to remove a node.

**int pop() {**

**Node \*temp = top;**

**int poppedData = top->data;**

**top = top->Next;**

**delete temp;**

**return poppedData;**

**}**

1. Implement the function display() to display all nodes in the stack.

void display() {

Node\* temp = top;

while(temp != NULL) {

cout << temp->data << “->“;

temp = temp->Next;

}

cout << “NULL”<< endl;

}