COP4530 – Data Structures, Algorithms and Generic Programming
Recitation 7
Date: October 5 & 9, 2008

1. For the following program, draw the state of the stack as the program computes the sum of the elements in the vector.

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

int sum(vector<int>, int);

int main() {
    int total = 0;
    vector<int> v;

    v.push_back(10);
    v.push_back(5);
    v.push_back(3);
    v.push_back(2);
    v.push_back(7);

    total = sum(v, 0);

    cout << "Total: " << total << endl;

    return 0;
}

int sum(vector<int> v, int i) {
    if (v.size() == 0)
        return 0;
    if (i == v.size() - 1)
        return v[i];
    return v[i] + sum(v, i+1);
}
```

2. Write a program that uses three stacks of integers, s1, s2, and s3. Then, have the program put values from 1 through 10 in s1 so that 10 is at the top of the stack. Then copy all the values from s1 into s2, using s3, so that all s2 contains all the elements in the same order that they were originally in s1 (10 at the top of the stack).