COP4530 – Data Structures, Algorithms and Generic Programming
Recitation 7
Date: February 17 & 19, 2009

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

```
#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).