

COP4530 – Data Structures, Algorithms and Generic Programming
Recitation 7
Date: February 20, 2008

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, s_1 , s_2 , and s_3 . Then, have the program put values from 1 through 10 in s_1 so that 10 is at the top of the stack. Then copy all the values from s_1 into s_2 , using s_3 , so that all s_2 contains all the elements in the same order that they were originally in s_1 (10 at the top of the stack).