COMP 356 Homework Assignment 8

Acknowledgment. The first two questions are based on questions originally written by Prof. Tim Wahls.

1. Consider the following C++ declarations:

```
typedef char xtype;
typedef char atype[10];
typedef xtype axtype[10];
typedef axtype ax2type;

char a[10];          axtype d;
xtype b[10];         ax2type e;
atype c;             xtype f[10];
```

   (a) (3 points) List all variables whose type is structurally compatible with the type of variable `c`.

   (b) (3 points) List all variables whose type is name compatible with the type of variable `c`.

2. (3 points) Consider the following program:

```
#include <iostream>
int x = 4, y = 5;

void printxy(void) {std::cout << x << " " <<  y << std::endl;}

void foo() {
  int x = 6;
  printxy();
}

void baz() {
  int x = 5, y = 7;
  printxy();
  foo();
}

int main() {
  int y = 6;
  printxy();
  baz();
}
```

   What output does this program produce under static scope (as in C++)?

3. (3 points) Do Sebesta chapter 5, Problem Set question 10 (page 238). To make sure you are attempting the right question, note that the final sentence of this question reads, "For each of the four marked points in this function, list each visible variable, along with the number of the definition statement that defines it."

4. (8 points) Do Sebesta chapter 5, Programming Exercise 7 (page 241). To make sure you are attempting the right question, note that this question starts as follows: "Write three functions in C or C++...". Clarifications: As your solution to this question, please submit a printout of the code used for the experiment, together with an explanation of the results. Your explanation should be 50–100 words long. Please do your own online research to find out a good way of timing experiments in C/C++.