
CmpE 320 – Spring 2008 – Assignment 2 Questions

Question 1: Scoping (40 pts)

You are given the following program written in syntax like C:

```
int a;

void assign_a(int n) {
    a = n;
}

void print_a() {
    printf("%d ", a);
}

void first_fun() {
    assign_a(1);
    print_a();
}

void second_fun() {
    int a;
    assign_a(2);
    print_a();
}

int main() {
    assign_a(0);
    first_fun();
    print_a();
    second_fun();
    print_a();
}
```

What is the output of this program if the language uses *static scoping*? What if it uses *dynamic scoping*? Trace the execution of the program clearly (refer to *Evaluation of static scoping and dynamic scoping* sections in your textbook). (20 pts each)

Question 2: Parameter Passing (60 pts)

You are given a C-like sample program as seen below. Assume static scoping and give the outputs if the used parameter passing method is: Pass by value, pass by reference, pass by value-result and pass by name. Show your work step by step! (15 pts each)

```
char letters[5] = {'a', 'b', 'c', 'd', 'e'};
int i = 1;
void fun(int x) {
    i++;
    x = 'a';
    letters[2] = 'd';
    i--;
}
main() {
    for( i=0; i<4; i++ )
        fun(letters[i]);
    printf("%c', '%c', '%c', '%c', '%c'\n", letters[0], letters[1], letters[2], letters[3], letters[4]);
}
```

Notes:

- Submission will be just before your final exam.
- See <http://www.cmpe.boun.edu.tr/~gungort/informationstudents.htm> for general information about the assignments and the course policy.
- The sole purpose of this assignment is to familiarize you with the processes involved in answering questions related to programming languages. Thus, please work on them by your own.