

Test #1

Your name and student number: _____

- You have **30 minutes** to answer to **3 problems** (30 points).
- Total **5 pages** including this cover page and last two blank pages.
- **Writings on the given box are counted only:** no points for writings outside the box.
- Write answers **clearly and legibly**. No points for ambiguous or illegible writings.
- Read the following quote from *Handong CSEE Standard* and declare your agreement below.

Examination

1. Examination is an educational act necessary for evaluation of the students' achievement and for encouraging the students to absorb the material in the process of preparation.
2. Student should do their best to prepare for exams in order to improve her/his own knowledge and skill and should fully engage in the test during examination hour.
3. Accessing or providing unauthorized information, including other students' answer sheets, is regarded as cheating. The use of electronic devices, including cell phones and computers, without permission is strictly prohibited.
4. Entering or leaving the classroom during the examination before the finish time without permission is regarded as cheating.

I uphold Handong Honor Code and Handong CSEE Standard in taking this exam.

your sign: _____

Problem 1 (10 points)

Given the following C program, draw a stack diagram at a moment when Line 05 is first executed.

```
01  #include <stdio.h>
02  #include <stdlib.h>
03  int sum (int v) {
04      if (v == 0) {
05          return 0 ;
06      }
07      return v + sum(v - 1) ;
08  }
09  int sum_of_sums (int v) {
10      int s ;
11      if (v == 0) {
12          return 0 ;
13      }
14      s = sum(v) ;
15      return s + sum_of_sums(v - 1) ;
16  }
17  int main () {
18      int t ;
19      t = sum_of_sums(3) ;
20      printf("%d\n", t) ;
21      return EXIT_SUCCESS ;
22  }
```

Problem 2 (10 points)

Explain what is compiling in computer programming.

Problem 3 (10 points)

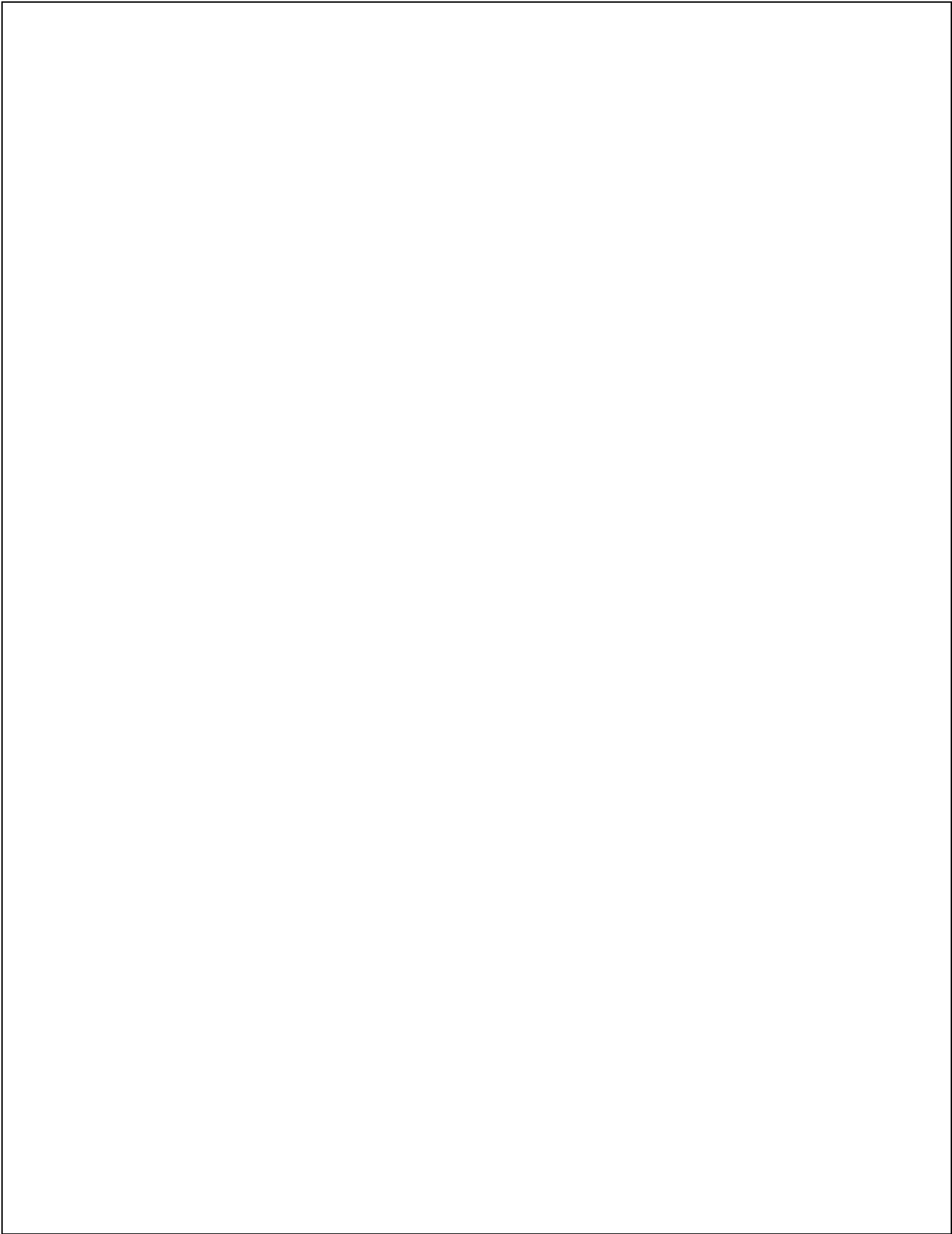
Suppose that two linear equations are given as follows:

$$\begin{aligned}y &= a_1x + b_1 \\ y &= a_2x + b_2\end{aligned}$$

Depending on the values of , there may exist one solution, x and y , that satisfies the two equations at the same time. Or, there exists no solution, or infinitely many solutions.

Write complete code of a program that receives four integers from a user, which represents a_1, b_1, a_2 and b_2 , respectively, and then prints out the solution x and y as two real numbers if exists, or prints out “No solution”, or “Infinitely many solutions” if it is determined so.

(the answer box is in the next page)



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