Problem Solving Practice
HW Problem #1

CSE4152
Sogang University

Finding Celebrities

A celebrity is defined as a person who is known by everybody but does not know anyone. How can you find any celebrities among N people?

You can freely ask anyone as follows: "Hey, you know Mr. (or Ms.) X?"

Suppose that there are N people. Design a method that
a) determines whether there is some celebrities among the people
b) if there is any celebrities, find them efficiently (minimizing the number of questions you make).

Minimum calculation

Imagine an electric calculator which has only two arithmetic operations, i.e., assignment operation(:=) and multiplication operation (x). We want to let this machine compute b = an for given numbers a and n. Design a method that produce a code for this machine, minimizing the number of multiplications.

Example when n = 16

x1 := a;

x2 := x1 x x1; // a2

x3 := x2 x x2; // a4

x4 := x3 x x3; // a8

x5 := x4 x x4; // a16

b:=x5

Submission

- Please submit your report on the cyber campus.

- Please submit your report file using the following naming format:

  - CSE4152_STUDENTID_HW01.EXT (EXTENSION)

  - Ex) **CSE4152_20085934_HW01.doc or hwp**