

# Computer Science A, Spring 2007

NATBAS, Roskilde University

## Miniproject 2

March 8, 2007

This miniproject asks you to implement two quizzes in Java where the user interacts with the program. In the first quiz the program “thinks of” a number that the player should guess. In the second quiz the player should think of a number that the program should guess. It is unspecified (and therefore up to you to decide) how to combine these two parts into one program. It is also unspecified which parts of the program should be implemented in which classes.

The answer to this exercise should consist of a Java program that you develop yourself. You must hand in a small report that presents your program, that shows at least a few example runs, and that explains the limitations of your solution, if any. (You are welcome to extend the program with additional features.)

The program should be designed and implemented by you alone. This implies that **you may not** work together in groups. It also implies that **you may not** ask someone else to implement your solution **nor may you** download parts of your solution from the internet.

Your answer should be handed in before Friday, March 23, at 9:00.

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### 1 Two interactive quizzes

In this exercise you are asked to implement two interactive quizzes.

#### Quiz 1: The player guesses a secret number

In the first quiz, the program “thinks of” a number within a certain range. (You may fix this range in our program or you may allow the player to enter this range before starting

the quiz.) The number should be “random”. (Consult the documentation for the class `java.util.Random`.)

The goal of the player is then to “guess” this number by entering values at a prompt. After each guess, the program will respond with either a “*yes, you got it*” (when the guess with correct), a “*no, too small*” (when the guess was too small), or a “*no, too large*” (when the guess was too large). If the players guess was correct the program stops.

A typical interaction with this first quiz program might look as follows. (The text written using a bold **typewriter** font is entered by the player.)

```
I'm thinking of a number between 1 and 100
Have a guess? 50
No. The number I'm thinking of is smaller than 50

Have a guess? 35
No. The number I'm thinking of is larger than 35

Have a guess? 47
No. The number I'm thinking of is smaller than 47

Have a guess? 43
Yes! You got it in 4 guesses!
```

## Quiz 2: The program guesses a secret number

In the second quiz is just the opposite: The player thinks of a number that the program should then attempt to guess.

A typical interaction with this second quiz program might look as follows. (Again, the text written using a bold **typewriter** font is entered by the player.)

```
Think of a number between 1 and 100
Is it 50? no larger
Is it 75? no larger
Is it 88? no smaller
Is it 81? no larger
Is it 84? yes
Yes! I got it in 5 guesses!
```

It is up to you to decide how smart the program will be when guessing. Examples of not-so-smart programs are programs that guess at random and programs that start from one end of the range.

**Hint 1** You may find it necessary to use the class `java.util.Scanner` to read input typed in by the player.