Lesson 4. Utility classes

1. Develop a Java program to play the *guess the number* game. The program must ask the user to introduce a number between 0 and 99. Next, this number is compared with the secret number, which must have been randomly generated previously. If the user number is equal to the secret number, the program ends. If the user number is different from the secret number, the program must print a clue indicating if the user value is lesser or greater than the secret number.

2. Develop a Java program to calculate the transpose of a matrix introduced by the user with the keyboard. The program must carry out the following steps:
   1. Ask the number of rows of matrix A (*r*)
   2. Ask the number of columns of matrix A (*c*)
   3. Read the values of *A* (r x c values)
   4. Print *A*
   5. Calculate *B*, the transpose matrix of *A*
   6. Print *B*

3. Develop a Java program to play a simplified version of the *hangman* game. The program must:
   1. Choose randomly a word *s* from an array of predefined Strings
   2. Print the number of letters of *s* as a clue for the user
   3. Ask the user for a letter (*c*)
   4. If the letter *c* is not included in *s*, increment the number of tries
   5. If the letter *c* is included in *s*, print the position (or positions) in which it is located
   6. The program ends when the number of missed tries is greater than 6 or when all the letters of *s* have been discovered

   Tips:

   `s.length()` returns the number of letters of s

   `s.indexOf(c, 0)` returns the position of *c* in *s*, starting comparisons from position 0, or -1 if not included. `s.indexOf(c, 1)` starts comparisons from position 1, etc.

   To check if the user has introduced all the letters of the word, an `int` variable `remainingLetters` counting the remaining letters can be created. For instance, if `s = "abacus"`, `remainingLetters = 6`. After the user tries with letter 'a', `remainingLetters = 4`.

Programming – Grado en Ingeniería Informática

Authors

Of the English version:
Juan Gómez Romero

Based on the work by:
Ángel García Olaya
Manuel Pereira González
Silvia Castro García
Gustavo Fernández-Baillo Cañas
Daniel Pérez Pinillos
Javier Ortiz Laguna
Álvaro Torralba Arias de Reyna

Universidad
Carlos III de Madrid