

**1. (Save as hangman.java)**

Write a game of Hangman using arrays. Allow the user to guess letters and represent which letters have been guessed in an array. The user is allowed to guess wrong letters for 12 times. (May refer to this link on what is hangman <http://www.webhangman.com/hangman.php>). Your list of words should have read from a file called **word.dat** before you play the game.

**2. (Save as mastermind.java)**

Write a program that plays a variation of the game of Mastermind with a user. For example, the program can use pseudorandom numbers to generate a four-digit number. The user should be allowed to make guesses until he gets the number correct. Clues should be given to the user indicating how many digits of the guess are correct and in the correct place and how many digits are correct but in the wrong place.

**3. (Save as collapseMain.java)**

Write a method called **collapse** that accepts an array of integers as a parameter and returns a new array containing the result of replacing each pair of integers with the sum of that pair. For example, if an array called list stores the values {7, 2, 8, 9, 4, 13, 7, 1, 9, 10}, then the call of collapse(list) should return a new array containing {9, 17, 17, 8, 19}. If the list stores an odd number of elements, the final element is not collapsed. For example, if the list had been {1, 2, 3, 4, 5}, then the call would return {3, 7, 5}. Your method should not change the array that is passed as a parameter.

**4. (Save as vowelCountMain.java)**

Write a method called vowelCount that accepts a String as a parameter and produces and returns an array of integers representing the counts of each vowel in the string. The array returned by your method should hold five elements: the first is the count of As, the second is the count of Es, and so forth. For example, the call vowelCount("I think, therefore I am") should return the array {1, 3, 3, 1, 0}. The vowel could be in the form of uppercase and lowercase. You must prompt the user to key in the desire sentence which should not be more than 80 characters. Only the first 80 characters would be counted.