Programming, and Data Structures

Workbook 0

Remember to keep your lab work organized so you can use if for revision and make it easy to submit.

1. Write a program in a file called **Average.java** that uses an array that holds the percentage mark for 20 students. Have the program call a method to calculate the average mark obtained by those students.
2. Write a program in a file called **Insert.java** that uses an array to hold 20 values. Have the program call a method to insert a value into the array at a specific array location. Use a loop to ensure that you can insert several items and print the array after each insertion to view the result.
3. Write a program called **LinearSearch.java** that uses an array to hold 20 values. Populate the array. Have the program call a method to carry out a linear search of the array that returns the location of the search item in the array if it is found, or –1 if the search item is not in the array.

**Note**

* Using your IDE generate a new project called <lastname>\_<firstname>\_<studentnumber>\_<workbook0>
* e.g. kohlmann\_stephen\_1234567\_workbook0
* Use the default package
* Create 3 java files with the names above.
* Discuss how you intend to write your programme with your partner before you write it.
* Draw out a picture of the array data structure and how you plan to use it, drawing helps maintain focus and improves memory.
* Ensure the following
  + Each file contains a class with the same names as the java file name
  + Each class contains a constructor.
  + The constructor calls the super() method.
  + All method in the class are public
  + All classes have a main method which tests the public methods.
  + Comments
    - Each method has a comment describing what the method does in the following format */\*\* \*\*/*
    - Any complex line has its own comment *//*