# KV4000 Week 5 Lab exercises

These exercises are primarily designed to test and develop your understanding of selection (if … else), iteration (while, do…while) and use of the Scanner class.

### Task

For a number of today’s exercises you will be expected to write a method for each exercise containing the solution to the exercise. Please start by creating a new project ‘Week5Lab’, and then create a class ‘Week5Exercises’.

For a number of the exercises you will need to get input from the keyboard, so begin by creating a Scanner object – do not forget the required import statement. Please remember to document your code and to check your documentation as you proceed. Remember all solutions should be tested – do not assume that if there are no compiler errors that your solution is correct. The compiler checks for syntax errors (errors in the Java language you write). It does not check for other errors – 2 + 2 does not equal 5, even if the code is syntactically correct! All output should be checked against what you expect it to be.

**Exercise 1**

A student’s final result is calculated as an average of level 5 and level 6 results. The grade is calculated as follows:

* 70 or above First
* 60 – 69 Upper Second
* 50 – 59 Lower Second
* 40 – 49 Third
* Below 40 Fail

In your class write a method **public void ex1()** that receives the average mark from the keyboard and outputs the result to the console window.

**Exercise 1a**

Your code should also check that the mark is ‘reasonable’ – it must be in the range 0 – 100. Where it is greater than 100, the method should output: ‘Mark entered was over 100: [mark]. ‘. Where it was less than 0 a similar message should be output. Amend the code accordingly.

**Exercise 2**

Some courses have a different classification system where the results are:

* Distinction
* Merit
* Pass
* Fail
* Absent from assessment

Write a method that receives the initial lowercase character from the keyboard and outputs the full result. Where the value entered is not one the legal values (d, m, p, f, a), the method should output a message “Illegal value entered: [value]”

**Exercise 3**

Write a program which prints the numbers between 1 and 10, twice the number and three times the number, in three columns. Use a while loop.

(Note: The string “\t” will return a ‘tab’ in the same manner as “\n” returns a new line.)

**Exercise 4**

Rewrite the previous example, this time using a do...while loop.

**Exercise 5**

Write a program which inputs a number of integers terminated by 0, and prints their average. The 0 should *not* be included in the calculation.

**Exercise 6**

Rewrite the previous example, this time using a do...while loop.

**Exercise 7**

Write a program to sum the first n numbers, where n is a number you input. Check the program using inputs of 10 that should give an answer of 55, and 20 answer should be 210.

**Exercise 8**

Rewrite exercise 7 by adding code to report that a negative number has been input to the program above and terminate the program.

**Exercise 9**

Rewrite exercise 8 to allow the user of the program above to re-input the number.