**Laboratory in1278LR Introduction to Programming with Java**
**Delft University of Technology, Faculty EWI, Software Engineering Research Group.**
**Group = 2; Remainder = 1**

**Assignment 4**
Create a new directory with the name Assignment4.
Use this directory to save all programs that you will create as part of this assignment.

**General**
This chapter is about methods. During the construction of your programs you should be using methods as much as possible.

**Part 1**
The maximum allowable deflection of a beam depends on its use in a construction. For a floor, the typical maximum allowable deflection in inches is $D_{max} = L / 240$, while for a roof beam $D_{max} = L / 180$, where $L$ is the length of the beam in inches.

- Using these formulas, write and test a method named maxDeflect(…) that accepts the length of a beam and the type of beam (floor or roof, using a character code) and returns the maximum allowable deflection.
- Include the method in a working program. Make sure your method is called from main() and correctly returns a value to main(). Have main() display the value returned. Test the method by passing various data to it.

**Part 2**
Redo your assignment 3 Part 1, this time using methods instead of in-line computations.
The array should be created by main( ), and the array should be passed to a routine calculating the function values.
Additionally, main( ) should pass the array to a method which prints the array. This time however, not with 4 values per line but with a variable number, indicated by a parameter *n*.
Similarly, for the calculation of the maximum and minimum values in the array, two methods should be used. The requirement that the array should be traversed only once is dropped.

**Part 3 Random**
It is often useful to simulate the drawing of a random card from a deck of 52 cards. Write a Java method draw( ) that simulates the drawing of a card. The draw( )-method needs to be called twice: the first time it will return an integer in the range 1 .. 13 indicating one of the cards of a card deck. Note: it is not needed to name the card drawn e.g. ACE; just a number will suffice. The second time it will return a number in the range 0 .. 3 indicating the kind of card (hearts, clubs etc). Again, returning a number will suffice.
Hint: Call Math.random( ) to generate a random number. Divide the possible values out of Math.random( ) into equal intervals and return the number of the interval that a given random number falls into. Read about Math.random() on page 232 of the book.