# COMP712 Programming Languages

Assignment 1 – 15%

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S2 2019 Handed out 16/7 **Due date: 22/8 NO extension. 5 marks will deducted for each day late. Please submit a hardcopy during your tutorial.**

# The Task

Discuss FIVE issues comparing two programming languages of your choice (except JAVA).

# Motivation

The goal is to get you do a **self-study** comparing two different programming languages. There are plenty of such comparisons on the internet (and in books) and your task is to find them and select 5 to discuss. Please provide your sources but please do not quote more than two points from each source (i.e. you need at least three sources to complete the assignment). You may copy directly from your source but you need to clearly understand what you have written/copied (i.e. do further reading) and your understanding will be assessed as part of the assignment.

Hint: Choose interesting comparisons to discuss.

# What to hand in.

You should hand in a typed, hardcopy, at most 3 pages, essay in Times font 12 points or equivalent and single spacing. For each comparison, state the point of difference or similarity and then provide a paragraph to discuss the issues raised. For example (this point can no longer be used in your assignment):

1. Arrays are reference types in both C# and Java.

In Java, multi-dimensional arrays are implemented solely with single-dimensional arrays (where arrays can be members of other arrays). Java doesn't support true multidimensional arrays. A true multidimensional array is rectangular arrays that represent an n-dimensional block. C# supports single-dimensional array, multidimensional arrays. There are two types of multidimensional array in C#, rectangular array and jagged arrays. A rectangular array is a single array with more than one dimension, with the dimensions' sizes fixed in the array's declaration. A jagged array is akin to an array in Java which is an array of arrays, meaning that it contains references to other arrays which may contain members of the same type or other arrays depending on how many levels the array has.

The syntax for defining an array looks similar in C# to that in Java, by placing empty square brackets with the type and the variable name. However, it is less flexible in C# than that in Java. For example,

Int[] X = new int[] { 0, 1, 2, 3 };

int X[] = new int[] { 0, 1, 2, 3 };

These two declarations are both legal in Java. In C# only the first line is valid. The empty square brackets cannot be placed after the variable name; it must follow the type specification.

Possible questions that I could ask you:

1. What is a reference type?
2. Is there any advantage of providing two different ways to declare arrays in Java?
3. What is a true multidimensional array?
4. Why is there a need to fix the dimension size of the rectangular array?

# Marking Scheme

2 marks each for the FIVE issues raised and 5 marks for providing me with a satisfactory explanation, giving a total of 15. For each issue raised, a superficial comparison (e.g the ways arrays are declared are different or one ends a sentence using a semicolon while the other uses a full stop) will get 0 mark. In other words, you need to identify/study useful comparisons.

1 mark is deducted for every violation of what is asked above. Example of these include exceeding the page limit, using the wrong font, hand in a handwritten assignment, etc.

You have 5 weeks to complete the assignment. You can expect to be called upon for an interview starting from week 7 and usually during your tutorial session.