

# Assignment 1 of CE2004, Principles of Programming Languages

**Due day: 15<sup>th</sup> April 2007**

**P.S.:**

**(1) You need to type your answers and print them out in paper. And then hand the answer sheets to TAs.**

**(2) Late submission will not be accepted.**

**(3) You can discuss these questions with your classmates; however, copying other student's answers is strictly prohibited.**

(1) (7 points) What arguments can you make against the idea of a single language for all programming domains?

(2) (6 points) What are the major language evaluation criteria?

(3) (6 points) Why is the readability property of a programming language important?

(4) (6 points) Why does the readability property of a programming language must be considered in the context of the problem domain?

(5) (7 points) Java uses a right brace to mark to end of all compound statements. What are the arguments for and against this design?

(6) (7 points) Many languages distinguish between uppercase and lowercase letters in user-defined names. What are the pros and cons of this design decision?

(7) (7 points) Why do readability and writability influence reliability?

(8) (6 points) Nowadays, what methods are used to translate high level programs into machine ones?

(9) (7 points) What are the arguments for writing efficient programs even though hardware is relatively inexpensive?

(10) (7 points) How do type declaration statements for simple variables affect the readability of a language, considering that some languages do not require them?

**(11)** (6 points) What is a language?

**(12)** (7 points) Write EBNF and syntax graph descriptions for the following:

(i). A Java class definition header statement

(ii). A C switch statement

**(13)** (7 points) Rewrite the BNF of Example 3.4 to give + precedence over \* and force + to be right associative.

**(14)** (7 points) Modify the grammar of Example 3.4 to add a unary minus operator that has higher precedence than either + or \*.

**(15)** (7 points) Write an attribute grammar whose BNF basis is that of Example 3.6 in Section 3.4.5, but whose language rules are as follows: Data types cannot be mixed in expressions, but assignment statements need not have the same types on both sides of the assignment operator.