

Tutorial 1

The first part of the tutorial should be devoted to questions you have about course material. Don't let your tutor off lightly – they have knowledge which you can make good use of.

You will be expected to engage with the tutor and discuss solutions to the problems presented here. The content covered in the tutorials will assist in your understanding of the practical requirements for the checkpoints.

1. Programming Languages

What are the meanings of the terms *syntax*, *semantics* and *symbol*. Make reference to these concepts in discussing:

- i. In what ways are programming languages (such as Java) similar to natural languages (for example, English and Thai)?
- ii. What particular requirements do programming languages have and how have these requirements affected their design? In what ways are programming languages different from natural languages?

2. Identifiers

Which of the following are valid Java identifiers and which of those are appropriate (are they meaningful)?

- i. g_1
- ii. max_speed
- iii. class
- iv. 4sale
- v. _1_2_3
- vi. x

3. Basic Structure of a Java Application (Program)

Identify the syntactic elements which make up the following Java program, including

- i. the major elements (classes, methods and statements) and their components, and
- ii. reserved words and identifiers, and
- iii. string, integer and floating point literals.

```
class Sum {  
    public static void main(String[] args) {  
        System.out.print("The sum of the numbers " + 4 + " and " + (5 + 10));  
        System.out.println("is " + (4 + (5 + 10)));  
    } // end of main  
} // end of Sum
```

- iv. What do "System" and "out" refer to?
- v. What will the program output?

4. Compilation and Syntax Errors

- i.** Explain what a compiler does and what part it plays in the development of programs.
- ii.** What is the difference between a syntax error and a logical error? Provide examples of syntax and logical errors. What is the other type of error that is encountered in programming? Suggest an example.
- iii.** Identify the syntax errors in the following program. Explain why each error has occurred and how it could be corrected.

```
1    class Errors {  
2        public static void main(String[] args) // {  
3            system.out.println(5 + " is larger than " + 6)  
4            system.out.println("x =  + 4 + ", y = 5" ;  
5        }  
6    }
```

- iv.** Categorise each of the following situations as a compile-time error, run-time error, or logical error.
 - a)** multiplying two numbers when you meant to add them
 - b)** dividing by zero
 - c)** forgetting a semicolon at the end of a programming statement
 - d)** spelling a word incorrectly in the output
 - e)** producing inaccurate results
 - f)** typing a { when you should have typed a (