Software and Programming 1

Lab 1:
HelloWorld Program
and use of a Debugger

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SP1-Lab1.ppt
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Java Project

Name of project: **hello**

Name of class:  **HelloWorld**
Getting Started

- Launch BlueJ - begin with the **Start** icon in the lower left corner of the screen.

- Select the options in the order shown:
  
  **Start** -> **All Programs** -> **Programming Tools** -> **BlueJ**

- Create a new Project on your disk space.
  1. Select Project then followed by **New Project**.
  2. Select a directory in your disk space and a suitable name for your project, e.g. **hello**. After entering **hello** in the BlueJ window, a new BlueJ window will appear for the project **hello**.
Getting Started (2)

• Create a new class by clicking on button **New Class ...** in the new BlueJ window.

• Enter the name **HelloWorld** for the new class and click on **OK**.
Write your first class

• Move the mouse on top of the class icon with the name **HelloWorld**, right-click and select **Open Editor**.

• Delete all the code in the template class and leave it empty for now.
Write your first class (2)

- Writing your own code:
  1. Start by writing two keywords, **public class**.
  2. Write the name of the class, **HelloWorld**.
  3. First line of your code looks like: **public class** HelloWorld
  4. Any code that you might write next for the class HelloWorld
     must be put after the first line and it must be enclosed with
     braces (i.e.  

     ```
     public class HelloWorld
     {
       // all code must lie between the two braces that
       // define the boundaries of the class
     }
     ```

     The two slashes // denote the beginning of a comment.
Write your first method

• Steps in defining a method:
  1. First write `public static void`.
  2. Next write the method’s name `main`.
  3. Followed by the method’s parameters `String[] args` in brackets.
  4. Finally followed by the method’s boundaries `{ }`.

Your code must look like:

```java
public class HelloWorld {
    public static void main(String[] args) {
        // end of method
    } // end of class
}
```

Note the indentations of the lines of code which make the code easier to read.
Write your first method (2)

5. Use the statement
   `System.out.println();`
   within the method to make it print something in your terminal.
   For example,
   `System.out.println("Hello, World!");`

6. Your code must look like this:

   ```java
   public class HelloWorld
   {
       public static void main(String[] args)
       {
           System.out.println("Hello, World!");
       }
   }
   ```
Compiling your first class

• Click on the button **Compile**. The compiler will check your code for syntax errors and error messages (if any) are displayed at the bottom of the window.

• The final message should be one of the following.
  ▪ Either **Class compiled – no syntax errors**
  ▪ Or an error message.

• Important: after each modification of the code, **always compile the new code**.
Execute the method

• Close the Editor and return to the project’s workspace.

• Move the mouse on top of the HelloWorld icon, right-click and invoke the method main by clicking on it.

• A window will appear and select OK.

• A terminal window will appear with the message Hello, World!
1. Modify HelloWorld program into `PrintHelloWorld` as shown in lecture slide 20:

```java
public class PrintHelloWorld {
    public static void main(String arg[]) {
        for (int i = 1; i <= 10; i++)
            System.out.println("Hello World!");
    }
}
```

**Demo**: use the debugger for step-by-step execution.
2. Use the \textbf{for} loop from lecture slide 19:

\begin{verbatim}
for (int i = 5; i <= 10; i++) {
    sum = sum + i;
}
\end{verbatim}

to create a class that computes the sum of the first 10 natural numbers.

Use debugger for step-by-step execution – inspect the value of sum on each step.
3. Write a program that computes the factorial of a given natural number (passed as a command-line parameter).
Use of Debugger

Read Section 7 of the official BlueJ tutorial at:


which is also attached to the handout.