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|           Dr. Sami Albouq              |
|           Associate Professor          |
|       Email: salbouq1@iu.edu.sa        |
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Lab 0: Installing jGRASP and JDK for Java Programming Fundamentals

Objective: The objective of this lab is to guide you through the process of installing the Java Development Kit (JDK) and jGRASP, a popular integrated development environment (IDE), to set up your computer for Java programming. These tools are essential for creating, compiling, and running Java programs, and they will be your primary tools as you study programming fundamentals.

Prerequisites:
- A computer running a compatible operating system (Windows, macOS, or Linux)

Part 1: Installing the JDK (Java Development Kit)

Step 1: Download the JDK

    1. Open your preferred web browser.
    2. Go to the official Oracle JDK download page: [Oracle JDK
    Download](https://www.oracle.com/java/technologies/javase-jdk16-downloads.html)
    3. On the JDK download page, you will need to accept the license agreement to proceed.
    4. Choose the version of the JDK that matches your operating system (Windows, macOS,
    or Linux).
    5. Click the download link for your chosen version to initiate the download.
    6. Save the downloaded installer file to a location on your computer.

Step 2: Install the JDK

    1. Locate the downloaded JDK installer file.
    2. Double-click the installer to run it.
    3. Follow the installation wizard's prompts:
       - Choose the installation directory (you can usually use the default location).
       - Continue with the default installation settings unless you have specific
    preferences.
       - Complete the installation process by clicking "Finish."

Step 3: Verify the JDK Installation

    1. Open a terminal or command prompt:
       - On Windows: Press `Win + R`, type `cmd`, and press Enter.
       - On macOS: Search for "Terminal" using Spotlight.
       - On Linux: Search for "Terminal" in your applications.

    2. In the terminal, type the following command and press Enter:

       javac -version

    3. You should see output similar to:

       javac x.y.z_abc

    where `x.y.z_abc` is the version number of the installed JDK. This confirms that the
    JDK has been successfully installed.

Part 2: Installing jGRASP

   Step 1: Download jGRASP

      1. Open your web browser.
      2. Go to the official jGRASP download page: [jGRASP Download](http://www.jgrasp.org/)
      3. Look for the download links specific to your operating system (Windows, macOS, or Linux).
      4. Click the appropriate link to initiate the download.
      5. Save the downloaded installer file to a location on your computer.

   Step 2: Install jGRASP

      1. Locate the downloaded jGRASP installer file.
      2. Double-click the installer to run it.
      3. Follow the installation instructions provided by the installer:
         - Choose the installation directory (the default location is usually fine).
         - Proceed with the default installation settings unless you have specific preferences.
         - Complete the installation process.

   Step 3: Configure jGRASP

      1. Open the jGRASP application from your applications or programs menu.
      2. Upon opening, you might be prompted to locate the JDK installation directory. Provide the path to the JDK installation directory that you noted during the JDK installation in Part 1.

   Step 4: Create a Test Project

      1. In jGRASP, go to the "File" menu and select "New" > "Java"
      2. Provide a name for the class (e.g., `HelloWorld`) and click "OK."

   Step 5: Write and Run a Test Program

      1. In the editor window that opens for the new class, write a simple Java program, such as:

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

      2. Save the file by pressing `Ctrl + S` (Windows/Linux) or `Command + S` (macOS).

   Step 6: Compile and Run the Program

      1. Right-click the `.java` file you created in the project window.
      2. Select "Compile" from the context menu.
      3. After the compilation process completes successfully, right-click the generated `.class` file in the project window.
      4. Select "Run" from the context menu.

      Congratulations! You have successfully installed the JDK, set up jGRASP, and written and run a simple Java program.

   Conclusion:

In this lab, you have learned how to install the Java Development Kit (JDK) and jGRASP IDE on your computer. Additionally, you have practiced creating and running a basic Java program using these tools. These foundational skills are crucial for your journey into Java programming and will serve as the basis for more advanced programming concepts and projects.