AP Computer Science — Project 1 - Hello
Dr. Paul Bailey — Wednesday, August 16, 2017

Program 0. We must first establish an environment in which to work. We will work from the command line, using a simple editor, and calling the compiler and interpreter from the JDK directly from the command line. These comments apply to Windows; Macintosh users should perform analogous tasks.

- Make a command line icon by creating a new shortcut to `cmd.exe`.
- Make a notepad icon by creating a new shortcut to `notepad.exe`.
- Download and install `notepad++.exe`. Accept all defaults during the download procedure.
- Download and install the latest version of the JDK.
- Make a directory `C:/World`.
- In a text editor, type the following program, and store it as `C:/World/JPrompt.bat`.

```
SET DIRCMD=/ogne
SET PATH=C:\Program Files\Notepad++;C:\Program Files\Java\jdk1.8.0_144\bin;%PATH%
SET PROMPT=$G
COLOR 1E
CD C:\World
CMD
```

  Note that the path above may have to be adjusted for your computer.

- Make a JPrompt icon by creating a new shortcut to `C:/World/JPrompt.bat`.

Program 1. We now wish to make the famous "Hello World" program.

- Open JPrompt. You should be in the directory `C:/World`.
- Make a subdirectory called `Hello` (type `md Hello`).
- Move into this directory (type `cd Hello`).
- Open the text editor here, to edit the program `Hello.java` (type `notepad++ Hello.java`).
- Type in the following code. Save it (as `C:/World/Hello/Hello.java`).

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

- On the command line, note that the file `Hello.java` is there (type `dir`).
- Compile it (type `javac Hello.java`).
- Run it (type `java Hello`).

Program 2. We wish to make a new program by ever-so-slightly modifying our existing program.

- In JPrompt, navigate to `C:/World/Hello`.
- Copy the Hello program into a Goodbye program (type `copy Hello.java Goodbye.java`).
- Invoke the editor for the Goodbye program (type `notepad++ Goodbye.java`).
- Change `public class Hello` to `public class Goodbye`. In java, it is required that the name of a class matches the file name. Note that Java is case sensitive.
- Replace `"Hello, World!"` with `"Goodbye cruel world!!!"`.
- Save the program in the editor. Compile and run the program on the command line.

Program 3. In the `Hello` directory, type, edit, compile, run, and debug this program from our textbook.

```
import java.util.Scanner;

public class FirstProgram
{
    public static void main(String[] args)
    {
        System.out.println("Hello out there.");
        System.out.println("I will add two numbers for you.");
        System.out.println("Enter two whole numbers on a line:");
        int n1, n2;
        Scanner keyboard = new Scanner(System.in);
        n1 = keyboard.nextInt();
        n2 = keyboard.nextInt();
        System.out.println("The sum of those two numbers is");
        System.out.println(n1 + n2);
    }
}
```

Modify this program so that it also outputs the difference, product, quotient, and remainder of the two numbers. For the quotient, use integer division, which is `n1 / n2`. For the remainder, use modulo, which is `n1 % n2`.

Program 4. Copy `FirstProgram` into `SecondProgram`. Modify `SecondProgram` so that it asks for the radius and height of a cone, and outputs the volume of the cone.

Program 5. (Bonus) Investigate what it takes to scan in a string instead of an integer. Make a new Hello program which asks for the user's name, and then outputs `Hello` followed by the name the user types.