IPMF Lesson 0: INSTALLATION AND TESTING OF THE GOFER PROGRAMMING PLATFORM

These notes were written to facilitate the installation and initial use of the programming language Gofer. (Gofer is a dialect of Haskell, a world standard for "purely functional" programming languages.) Our subject is IPMF. It stands for "Introduction to Programming and its Mathematical Foundations."

Gofer is short for "good for equational reasoning." Soon, we will find out what that means. For now, note that Gofer does not have the assignment statement that is essential in languages like C and Java (hence there are no "variables.") Instead, the equality symbol "=" is used for definitions that *bind* names to their values. The bindings are immutable, i.e., unchangeable. So once a name has a value, it cannot change.

The programming platform is in a shared folder on Google Classroom. It contains a few files: (1) the Gofer interpreter, (2) sample scripts with file extension `.gs`, (3) a "prelude", and (4) this Installation Guide. Before downloading this platform to your machine, it is relevant to understand some technical terms.

Think of the ***interpreter*** as an calculator or expression evaluator. If you enter any valid expression into a handheld calculator, it will evaluate the expression and display the result. It is the same with our interpreter. Our interpreter is an executable named `gofer32.exe` (for MS-Windows) or simply `gofer` (for Linux). Depending on the operating system on your machine, you can keep the one file and delete/ignore the other.

The ***prelude*** consists of pre-defined functions that the user can take for granted. Any time the interpreter starts executing, the prelude is automatically loaded into it. Our prelude is named `pustd.pre`. (The dictionary states that a ***prelude*** is "an introductory performance or action, preceding and preparing for a more important matter," e.g., in symphonic music, a prelude is a section that introduces the main theme.)

A ***script*** contains user-defined functions created to solve specific computational problems. (Terminology: "script" is another word for "program".) The file extension `.gs` stands for "Gofer script."

Apart from the prelude, the user can load one or more scripts into the interpreter. As a result, all the predefined functions in the prelude and the desired user-defined functions are available in the interpreter. Think of these functions as buttons on old-fashioned calculators— press a button, and the work gets done.

Installation: If the platform sent to you is a zip file, unzip it, i.e., extract the relevant files. If it is a shared folder, right-click and download the files in it, one by one. Put these files in a directory, and put the directory at a convenient place, say the Desktop. There are no further installation hassles.

Execution: On MS-Windows, click on `gofer32.exe`, and the interpreter starts executing inside a command-line interface. On Linux, (1) start a Terminal, (2) make the directory containing Gofer as the current directory, (3) execute the command `"chmod u=x gofer"` (to make `gofer` an executable file) and (4) enter the command `gofer` (or `./gofer`) on the command line.

Note: In MS-Windows, if the font in the interpreter is an old-fashioned dot-matrix font, it is a good idea to change it to a raster graphics font. Right-click on the top border of the command-line interface, click on `Properties > Font > Lucida Console`, and change the font size to 20 to 24.)

Once Gofer starts executing, enter the expression `"2+2"`. If it responds with `"4 :Int"`, you can be sure that the installation is complete and correct. To load a script named `scr01.gs` into the interpreter, enter the command `:load scr01.gs` or simply say `:l scr01.gs` .

To create a script file in Linux, use a plaintext editor like `gedit`. When saving a script file, be sure to add the suffix `.gs`, otherwise the interpreter will not be able to load the file. On MS-Windows, you can create the file with the `Notepad` accessory, or an editor like `Notepad++`. While saving a new script file in MS-Windows, put the file name within double quotes, e.g., `"scr01.gs"`. (Otherwise the file extension will not be `.gs`, but `.txt` or `.rtf` , which is not acceptable to the interpreter).

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