

The Jack Compiler¹

Files format

A Jack program is a collection of one or more classes written in the Jack programming language. Each class is stored in a separate file. Typically, all the classes that make up a program will be stored in one directory. It is convenient to give this directory the name of the program.

The Jack Compiler translates files written in the Jack programming language into Virtual Machine code. For each source `.jack` file, the compiler creates a corresponding `.vm` file, and stores the translated code in it. Both files (`.jack` and `.vm`) are text files that may be edited with any text editor.

The compiler is capable of compiling either a single Jack file, or a collection of Jack files residing in one directory.

Activation

The compiler accepts a single command line argument that specifies either a file name or a directory name:

```
prompt> JackCompiler source
```

If `source` is a file name of the form `aaa.jack`, it is compiled into a file named `aaa.vm`, which is created in the same folder as `aaa.jack`.

If `source` is a directory name, all the Jack files in this directory are compiled. For each `aaa.jack` file in the directory, a corresponding `aaa.vm` file is created in the same directory.

If there are any syntax errors in one or more of the Jack files, compilation is terminated and an error message is printed.

Syntax Errors

During compilation, the compiler checks for syntax errors. When such an error is found, the compiler stops the compilation and displays a message. The message includes a description of the error and the line number in which it was found. If there is more than one syntax error, only the first error is reported. For technical reasons, some error messages do not include the line number.

Linking Errors

The compiler does not perform linking. This means that each Jack file is compiled separately, and linking errors are not checked. As a result, errors such as calling a non-existing function of another class are not discovered as part of the compilation process. Such errors are revealed when the VM code is loaded into the VM Emulator or when it is compiled into Assembly language.

¹ From *Computing Systems Discovered*, by Nisan & Schocken, to appear in 2002, www.idc.ac.il/csd