

# CS4215 Programming Language Implementation

## Lab task for Week 10

### An Efficient Interpreter for oPL

1. Download the file <http://www.comp.nus.edu.sg/~cs4215/labtasks/week10.zip>, and extract it to the Eclipse workspace folder. The workspace folder should now contain a file `cs4215_week_10`.
2. In Eclipse, go to “File”, “New”, “Project”, “Java Project”, “Next”, and choose “`cs4215_week_10`” as “Project name”. Press “Finish”.
3. Use the “Run Configurations” to run `oPLinterpreter.opl` with a file name (for example `test.opl`) as “Program argument”. The file can contain any oPL program that does not include classes. The compiler should reply:

`Result of evaluation:`

followed by the result value.

The reason why classes do not work yet are:

- Record property assignment does not yet add properties when they are not yet in the record. So currently, record property assignment is implemented according to the semantics of `imPL`, not according to the semantics of `oPL`.
- The functions `lookup` and `new` are not defined.

Note that object application is compiled such that the applications of `lookup` appear in the code as instances of the class `oPL.LookupApplication`. This way, we can optimize object application to make use of the inline caching idea presented in class.

Your tasks will be:

- Change the class `oPL Wrapper` into which all programs are wrapped. This way, you can make sure that the functions `lookup` and `new` are defined as desired.
- Change the class `oPL.RecordAssignment` to implement record property assignment according to `oPL`'s semantics.
- Change `oPL.LookupApplication` such that

- any lookup of a method is executed “natively” in Java, and not by interpreting oPL programs, and
- an “inline cache” is used that avoids repeated lookups, in case the objects being applied are instances of the same class.

Submit the resulting files

- `RecordAssignment.java`
- `Wrapper.java`
- `LookupApplication.java`

from your folder oPL in the IVLE workbook “Week 10”.

Make sure that you do not change any other files when you test your programs.

Suggestion: When you are done with the solution, save your four files in a secure place. Then download a fresh copy of the lab task, and place your three files into that copy. Then re-do your tests.