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CPSC 326

Project Writeup

I extended MyPL with a REPL. I added the ability to run MyPL statements outside of a main function and through the terminal, print the output of the expression. I added several REPL commands such as `“:load”`, which loads a file’s functions into the current environment. The command `“:reset”` resets the REPL global environment. The command `“:prev”` runs the previously entered command. The command `“:show”` shows the current REPL global environment, with `“:exit”` exiting the REPL. Building and running the REPL involves building MyPL with Bazel like normal, but to run, use the `“--repl”` flag. I was able to accomplish all that I set out to do. At the mid-point check-in, I revised my requirements to not include file loading, but I was able to complete it. I think that loading the file in to the REPL environment is a crucial aspect of making the REPL a usable program and extension of MyPL. With that extension, a programmer could write multiple MyPL files and use all of the functions included in a different file, treating the REPL loading like an `“include”` feature in other languages. I created tests for my REPL-ASTParser class to ensure that it could read and build up the individual statements outside of functions and types. I also added tests to the StaticChecker to ensure that my ‘living’ TypeInfo and SymbolTable were correctly saved and accessed. I tested and debugged the CodeGenerator step of the program using the VSCode Java Debugger extension as it was easiest to dig into the Java objects and ensure the correct function frames were being built and allocated that way. I also ran the program with several custom MyPL files to ensure loading worked correctly. Overall, I think that my extension greatly enhances the usability of MyPL and the likelihood of someone using the programming language. I think that MyPL would be a great “first language” because of it’s static typing, no function overloading, and simple syntax. One drawback is that there are no arrays built in, but with that extension and the REPL, I think that MyPL could be useful.