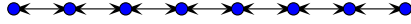


## Environment Module



### Task Description

This is your fourth milestone assignment. You may develop your code using any procedural language, but you must ensure it runs correctly on a stock linux distribution before submission.

Your task is to write a *environment system* for holding information about which variables are in scope and what there values are. An environment can be thought of as linked list of tables, each table (from front to back) holds the variables and their values for ever increasingly outer scopes. An environment can also be used during parsing to determine if a variable has been defined before use and to detect type errors in statically typed languages.

You should implement the following environment functions:

- placing an identifier and value into the most local table; returns the value inserted
- looking up a variable; all tables are searched from most local to most outer; the value of the first occurrence of the variable is returned
- setting the value of a variable; all tables are searched from most local to most outer; the value of the first occurrence of the variable is changed; returns either the new value or the old value
- making an empty environment; the environment consists of one empty table in the list of tables; the newly created environment is returned
- extending the given environment with a list of variables and a list of values; a new environment is returned with the variables and values placed in a table at the head of the given environment; the given environment is unmodified
- displaying the environment; this function should have two forms; one form displays only the local table, the other all tables

Start be reading *this*.

### Specifics

Specifically, you are to write a environment class or module. One should be able to exercise the environment by typing in the command:

```
environment
```

The output of the program should be text of the form:

```
Creating a new environment
The environment is: ...
Adding variable x with value 3
The environment is: ...
Extending the environment with y:4 and z:"hello"
The local environment is: ...
The environment is:...
...
```

### Grading the assignment

Grading will proceed exactly as the previous milestone assignment.

You should provide a *makefile* that responds to the commands:

```
make
```

and

```
make run
```

## Submitting the assignment

To submit your assignment, delete all object or class files from your working directory, leaving only source code, a makefile, a readme file, and any test cases you may have. Then, while in your working directory, type the command

```
submit proglan lusth environment
```

The submit program will bundle up all the files in your current directory and ship them to me. This includes subdirectories as well since all the files in any subdirectories will also be shipped to me.

You may submit as many times as you want before the deadline; new submissions replace old submissions.