

Path resolution

You probably found that it was a pain to test your shell in the previous part because you had to type the full path of every program. Luckily, every program (including your shell program) has access to a set of **environment variables**, which is structured as a hashtable of string keys to string values. One of these environment variables is the `PATH` variable. You can print the `PATH` variable of your development environment.

```
echo $PATH
```

```
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:...
```

When `bash` or any other shell executes a program like `wc`, it looks for a program called `wc` in each directory listed in the `PATH` environment variable and runs the first one that it finds. The directories in `PATH` are separated with a colon. You may find the function `strtok_r` to be useful for parsing the `PATH` string.

Modify your shell so that it uses the `PATH` variable from the environment to resolve program names. Typing in the full pathname of the executable should still be supported. **Do not use `execvp` since the autograder looks for `execvp`, and you won't receive a grade if that word is found.** Use `execv` instead and implement your own `PATH` resolution.