sp_assignment_4

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1. eval

At first, parse the command line. The command line consists of a name and zero or more arguments, all seperated by one or more spaces. The parsed command line will be stored in the "argv" which has the size of MAXARGS. The first "argv[0]" is the name. fork the current process to execute parsed command in argv. If the execve is failed, print Command Line found. If the job is a foreground job, then add the job as a foreground job wait until the foreground job finishes. If the job is a background job, then add the job as a background job and print the jid, pid, and command line.

2. builtin_cmd

"argv" consists of a name and zero or more arguments. The first "argv[0]" is the name, a built-in command. "builtin_cmd" is a function that recognizes and interprets the built-in commands such as quit, fg, bg and jobs. When quit, the process should be exited. When jobs, the process should list its jobs. When bg or fg, the process should do the background or foreground jobs. If the built-in command is well interpreted, then "builtin_cmd" returns 1. Otherwise, it returns 0.

3. waitfg

Waiting for a foreground job to complete means looping until a foreground job to complete. Checking the completion of foreground job can be done by "(job->state)==FG". Moreover, it is possible that job is NULL. In that case, there must be no sleep.