

| Category | Mark |
|---|-----------|
| Support for built-in commands <ul style="list-style-type: none"> • Marks will be deducted for: not printing the error messages as described (-5), not ignoring extra arguments (-5), not terminating processes that are suspended or run in the background before quitting (-5), failing to add or remove processes from the process table (-5), or failing to update the state of a process in the process table (-5). • For full marks, the solution must implement all built-in commands according to the specification. | /25 marks |
| Launching external programs <ul style="list-style-type: none"> • Marks will be deducted for: not returning to the shell after program execution completes (-5), failing to run a program in the specified path or the current directory with its arguments (-5), or not printing its output (-5). • No marks will be given to solution that uses <code>system()</code> or <code>popen()</code>. | /15 marks |
| Running programs in the background <ul style="list-style-type: none"> • Marks will be deducted for: not returning control to the user (-8), or not passing arguments to the background process (-2). | /10 marks |
| Support input/output redirection <ul style="list-style-type: none"> • Marks will be deducted for: failing to redirect standard input/output (-5 in each case). | /10 marks |
| Support piping the output of one program to another program <ul style="list-style-type: none"> • Marks will be deducted for: failing to pipe from one program to another (-10). • No marks will be given to solution that uses <code>popen()</code> or <code>pclose()</code>. | /10 marks |
| Handling signals generated by keystroke combinations <ul style="list-style-type: none"> • Marks will be deducted for: failing to capture Ctrl-C and/or Ctrl-Z and quitting the shell unexpectedly (-5), failing to terminate or suspend shell subprocesses (-5). | /10 marks |
| Makefile <ul style="list-style-type: none"> • Marks will be deducted for: Makefile does not have the required targets (-5), or fails to produce an executable called dragonshell (-5). | /10 marks |
| Readme file <ul style="list-style-type: none"> • Marks will be deducted for: Readme does not list the system calls they used to implement different features of the shell (-5), or does not adequately describe how they tested its functionality (-5). | /10 marks |

Assignment 1 – Simple Shell for Linux

Note: Deductions (to the entire grade) may be applied at the grader's discretion if the submission:

- Does not meet the requirements or does not support all the features listed in the assignment description;
- Does not compile or run correctly, e.g. due to a makefile related issue;
 - And to a lesser extent not compile cleanly with `-Wall` flags.
- Uses library functions listed in Section 3 of Linux man page instead of system calls to implement the key features of the shell.
- Has memory leaks (`valgrind` will be used to check for memory leaks).
- Has extremely poor code structure, style, or modularity.
- Has an incorrect file name.
- Does not kill background programs when the shell exits gracefully.

Note: The submission that does not compile or run on Linux lab machines will not receive any marks for correctness.