Assignment - I (Problem 1)
(Network Programming)

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The name of the bash-like shell is ‘cash’. In this assignment the term ‘cash’ shall refer to the shell implemented in the file “shell.c”.

Handling of the signals: Cash masks all signals except SIGQUIT and SIGINT which it handles by printing the required details as mentioned in the problem statement.

Implementation of redirection operator: The redirection operators ‘>’ and ‘<’ can be entered after the executable shell commands have been written. E.g. ls | grep > output.txt.
The output generated by the last command will be printed into the file in case of ‘>’ and the contents of the file will be fed into stdin in case of ‘<’.

Execution of a command: The execution of the command is done by taking the command string per pipeline (explained in next section), forking from the parent process (main shell) and executing through exec by providing the argument vector. There are two pipes, one to carry data to the child process and another to carry the output to parent process. The parent process then sends that output back as input to new child process to execute next pipelined command or to stdout or redirected file.

Support for pipelining: Cash supports single pipeline ‘|’ as in bash shell. To support new pipeline operators “||” and “|||”, the commands get stored in an array commands[10][3][BUFFER_SIZE].
E.g. for a command like “ls -l || wc, grep; commands with contain:
commands[0][0] = “ls -l”, commands[0][1] = “”, commands[0][2] = “”
commands[1][0] = “wc”, commands[1][1] = “grep”, commands[1][2] = “”