**Standard I/O:**

* **Standard In (Stdin) –** command line input – index number 0
* **Standard Out (Stdout) –** normal output – index number 1
* **Standard Error (Stderr) –** error or other info – index number 2

**Pipes (‘|’):**

They redirect the standard output of a command to standard input of another command.

For example:



**Redirection:**

The ‘>’ symbol redirects the standard output (default) of a command to a file.

Few examples are as follows:

* Command < filename : Input – Directs a file
* Command << stream : Input – Directs a stream
* Command <<< string : Input – Directs a string
* Command > filename : Output – Writes output to file
* Command >> filename : Output – Appends output to file

**Control Structures:**

Two main controls structures:

1. Loops
2. Conditionals

**Loops:**

**For –** Executes commands once for each member in resultant list, with name bound to current command

**While –** Execute commands until test commands have status 0 (True).

**Until –** Execute commands until the test commands have status 1 (False).

**Conditionals:**

**Test “[[…]]” –** Evaluates expression inside brackets, returns 0 if True, 1 is False

* [[ expression ]] – Standard
* [[ !expression ]] – Negative
* [[ exp1 && exp2 ]] – AND
* [[ exp1 || exp2 ]] – OR

**If –** Executes commands following conditional logic

* **Then** – used for evaluating a truthy if expression
* **elif** – used for checking other conditions, extending an if statement
* **else** – catch-all command used when no condition is met
* **fi** – keyword used to close the if statement

**Switch –** Selectively execute commands corresponding to pattern matching.

**Select –** Used for making user-interactive menus. Command executed on selection

**Arithmetic ‘((…))’ –** Performs arithmetic.