Contents

[**Standard Input /Output Redirection (I/O Redirection)** 2](#_Toc487901524)

[ File Descriptor 2](#_Toc487901525)

[ Standard input/output/error, their file descriptors and symbol used 2](#_Toc487901526)

[ **Redirect Standard Output to the file** 2](#_Toc487901527)

[ Syntax 2](#_Toc487901528)

[ **Redirect Standard Error to the file** 2](#_Toc487901529)

[ Syntax 2](#_Toc487901530)

[ Redirect Standard Output to one file and Standard error to another file 2](#_Toc487901531)

[ **Redirect Standard Output and Standard error to one file only** 3](#_Toc487901532)

[ Syntax 3](#_Toc487901533)

[ **Redirect Standard Input to the file** 3](#_Toc487901534)

[ **Operators** 3](#_Toc487901535)

# **Standard Input /Output Redirection (I/O Redirection)**

* It allows user to redirect input/output from/to the file instead getting displayed in terminal.
* The output of every command is of two types:

1. result of the command: referred as desired output
2. program status/error message : referred as error

* Standard Input: It defines the default place where commands listen for the information.
* Standard Output: It defines default place for the output to go.
* Standard Error: It defines default place for the error to go.
* File Descriptor: It is a positive integer number that refers to an input/output source.
* Terminal is the default descriptor for input/output/error.
* Standard input/output/error, their file descriptors and symbol used:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | file descriptor | Symbol |
| Standard Input | stdin | 0 | < |
| Standard Output | stdout | 1 | > |
| Standard error | stderr | 2 | 2> |

* **Redirect Standard Output to the file**:
* Syntax: command **>**<destination file>
* Example: free >vbhv : The output of free command is redirected to the file vbhv instead showing on the screen. The output can be verified by cat vbhv.
* While using “**>**”, the content is over written.
* To append the output, use “**>>**” operator.
* Example: free >>vbhv
* **Redirect Standard Error to the file**:
* Syntax: command **2>**<destination file>
* Example: cat 25 2>vbhv: The error is redirected to the file vbhv instead showing on the screen. The output can be verified by cat vbhv.
* While using “**2>**”, the content is over written.
* To append the output, use “**2>>**” operator.
* Example: cat 25 2>>vbhv
* To redirect error to null terminal,

#./vbhv.sh 2> /dev/null

* Redirect Standard Output to one file and Standard error to another file:

Example: #./vbhv.sh >f1 2>f2

Here, output is redirected to the file f1 and error is redirected to the file f2.

* **Redirect Standard Output and Standard error to one file only**:
* Syntax: command **>**<destination file> **2>&1**
* Example: #./vbhv.sh >f1 2>&1

Here, Output is first redirected to the file f1.

Now, **2>&1**: It redirects error (2) to the same terminal as the output (&1). Since output is already redirected to the file f1, the error is also redirected to file f1.

* Example: #./vbhv.sh 2>&1 >f1

Here, Error first redirected to the same place as output. Since output redirection is not defined yet, the error gets redirected to its default terminal itself.

Now, output is redirected to the file f1.

* Example: cat v1 v2 >f1 2>$1

This is also possible.

* **Redirect Standard Input to the file**:
* The read command takes input from the user.
* Standard input is terminated by reaching EOF (End Of File). EOF is the input executed by pressing Ctrl+d by the user.
* Example: cat
* When you type a number and press enter, you are sending standard input to the running cat program, which is expecting said input. In turn, the cat program is sending your input back to the terminal display as standard output.
* Let’s say cat f1 results into 20.

Now, read x <f1: It will read content of f1 directly instead providing prompt to user for giving input.

* **Operators**:

|  |  |
| --- | --- |
| **Operator** | **Description** |
| > | redirect output to the file |
| >> | append output to the file |
| < | redirect input to the file |
| << | append input to the file |
| & | merge output/input/error |
| 2> | redirect error to the file |
| | (pipe) | redirect output of one command as input of another |