# GNU/Linux - An Introduction
# Part 8-10
# ⟶ BASH Programming II⟵

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March 14, 2008; March 19, 2008; March 21, 2008



**Review**

- Bash Concepts/Definitions
- Bash Grammer - Simple Commands, Pipelines, Lists, Expressions

## Contents



# 1 Bash Grammer

## 1.1 Return Status

**Return Status I**

**Interpretation**

- 0 ⇒ Success/True
- (! 0) ⇒ Failure/False
- *Note:* Arithmetic expressions still follow C-style.

**Return Status II**

**Command Types**

- Simple Command
  - Return status of the command
  - & ⇒ return status is 0.
- Pipelines - return status of last command
- Lists - return status of last pipeline
- Expressions
  - Arithmetic -
    - 0 ⇒ successful and non-zero result
    - (! 0) ⇒ unsuccessful or zero result
  - Conditional -
    - 0 ⇒ successful and true condition
    - (! 0) ⇒ unsuccessful or false condition

## 1.2 Compound Commands

**Compound Commands I**

- (list)
- { list; }
- (( arithexpr ))
- [[ conditionexpr ]], combination with ( ), !, &&, ||
- [ conditionexpr ], test conditionexpr

**Compound Commands II**

- Condition Structure - if list; then list; [ elif list; then list; [ else list;] ] fi
- Iteration Structures -
  - For loop - for name [ in word ]; do list; done
  - For loop (2) - for (( expr1; expr2; expr3 )); do list; done
  - While loop - while list; do list; done
  - Until loop - until list; do list; done

**Compound Commands III**

- Case Structure - case word in [[(] pattern [|pattern ] ... ) list ;; ] ... esac
- Select Structure - select name [ in word ] ; do list ; done
- Functions - [function] name () compound-command [redirection]

## 1.3 Quoting

**Quoting**

- Backslash
- Double Quotes
- Single Quotes
- $' '
- Quote Removal

## 1.4 Parameters/Variables

**Parameters/Variables**

**Gross Definition**

- (name)
- Value
- attributes

**Types**

- Positional
- Special (* @ # ? - $ | 0)
- Shell Variables
- Arrays ([ ], * @)

## 1.5 Expansions

### Expansions I

### Brace Expansions

- { }
- Types - , and ..

### Tilde Expansions

Home directory

### Parameter Expansions

- ${param}
- ${!prefix*}, ${!prefix@}
- ${!name[*]}, ${!name[@]}
- ${#param}
- ${param:offset:length}, etc.

### Expansions II

### Command Substitution

- Back Quotes - ‘command‘
- $(command)

### Arithmetic Expansions

- $(( arithexpr ))
- $[ arithexpr ]

### Expansions III

### Process Substitution

- <(list)
- >(list)

### Pathname Expansions

- *
- ?
- [ ]

## 2 Summary

**Summary**

- BASH Compound Commands
- BASH Quoting
- BASH Parameters
- BASH Expansions

**References**

## References


[1] Machtelt Garrels. "Bash Guide for Beginners". Version 1.8. WWW link - http://tldp.org/LDP/Bash-Beginners-Guide/Bash-Beginners-Guide.pdf.

[2] man bash, man:/bash

[3] info bash, info:/bash

[4] Mendel Cooper. "Advanced Bash-Scripting Guide". Version 5.1. WWW Link - http://tldp.org/LDP/abs/abs-guide.pdf.