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| Program- BTech-3rd Semester | Type- Sp. Core-I |
| Course Code- CSET213 | Course Name-Linux and Shell Programming |
| Year- 2024 | Semester- Odd |
| Date- 09/09/2022 | Batch- BXX-BXX (Cyber Security)   |  | | --- | |  | |

**Lab Assignment 6**

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| **Exp No** | **Name** | **CO1** | **CO2** | **CO3** |
| 6 | Shell Programming operators | - | 100+ Free Tick Mark & Tick Images - Pixabay | - |

**Objective**: To implement the operators using bash scripts

**Outcomes:** After hands-on youwill be able to write basic shell scripts implement arithmetic, relational, logical, and bitwise operators.

**Hands-on Learning on operators (60 minutes)**

1. **Output redirection operator (>):** $ command > outputfile, Example: $ date > test6
2. **Input redirection operator (<):** $ command < inputfile, $ wc < test6
3. **Inline input redirection (>>):** only on command line, not in a file $ command << marker

Example: $ wc << EOF

> test string 1

> test string 2

> test string 3

> EOF

1. **Mathematical operators:** Number manipulation in shell scripts is done using two methods:
   1. The expr command (for compatibility with Bourne shell)
   2. Using brackets (Better way)

**The expr command:** $ expr 1 + 5





Example: Write an script to print the quotient of expression var1/var2 using *expr command*.

#!/bin/bash

# An example of using the expr command

var1=10

var2=20

var3=$(expr $var2 / $var1)

echo The result is $var3

**Using brackets:** ($[ operation ]):

$ var1=$[1 + 5]

$ echo $var1

6

$ var2=$[$var1 \* 2]

$ echo $var2

12

Limitation: The bash shell supports only integer arithmetic. We can bash calculator (**bc)** floating point arithmetic.

Example: Write a script to implement floating point arithmetic using **bc**

#!/bin/bash

var1=$(echo "scale=4; 3.44 / 5" | bc)

echo The answer is $var1

**Scripting Problems for Assessment (60 Minutes)**

1. Write bash scripts to implement arithmetic operators (+, -, \*, /, %, ++ and --)
2. Write bash scripts to implement relational operators (==, !=**, <, <=, >, >=**)
3. Write bash scripts to implement logical operators (&&, ||, !)
4. Write bash scripts to implement bitwise operators [bitwise AND(&), bitwise OR(|), bitwise XOR(^), bitwise complement(~), bitwise leftshift(<<), bitwise rightshift(>>)]

**Submission Instructions:**

1. Submission requires the screen shots of all the incurred steps to execute a shell script or a video showing the whole process.
2. All these files are in single zip folder.
3. Use the naming convention: Prog\_CourseCode\_RollNo\_LabNo.docx
4. Submission is through LMS only