

Bash Scripting Complete Guide

What is Linux Shell

Script:

```
#!/bin/bash
# Example showing shell executing commands
```

```
echo "This is Bash Shell"
whoami
pwd
```

Explanation: Shell is command interpreter between user and Linux kernel. It executes commands and scripts.

Check Shell Type

Script:

```
#!/bin/bash
echo $SHELL
ps -p $$
```

Explanation: Displays current shell type.

First Script

Script:

```
#!/bin/bash
echo "Hello Ram, welcome to Bash scripting"
```

Explanation: Basic script example.

Shebang Line

Script:

```
#!/bin/bash
# Shebang defines interpreter
```

```
echo "Using Bash interpreter"
```

Explanation: Tells system which shell to use.

Variables

Script:

```
#!/bin/bash  
name="Ram"  
echo "My name is $name"
```

Explanation: Variables store data.

Arrays

Script:

```
#!/bin/bash  
arr=("Ram" "Shyam" "DevOps")  
  
echo ${arr[0]}  
echo ${arr[@]}
```

Explanation: Store multiple values.

User Input

Script:

```
#!/bin/bash  
read -p "Enter username: " user  
echo "User is $user"
```

Explanation: Get input from user.

Arithmetic

Script:

```
#!/bin/bash
a=10
b=20
sum=$((a+b))

echo "Sum is $sum"
```

Explanation: Perform math operations.

If Else

Script:

```
#!/bin/bash
num=5

if [ $num -gt 10 ]
then
    echo "Greater"
else
    echo "Smaller"
fi
```

Explanation: Conditional logic.

Case

Script:

```
#!/bin/bash
read -p "Enter option: " opt

case $opt in
start) echo "Starting";;
stop) echo "Stopping";;
*) echo "Invalid";;
esac
```

Explanation: Multiple condition handling.

For Loop

Script:

```
#!/bin/bash
for i in 1 2 3
do
    echo "Number $i"
done
```

Explanation: Loop example.

While Loop

Script:

```
#!/bin/bash
i=1
while [ $i -le 5 ]
do
    echo $i
    ((i++))
done
```

Explanation: While loop example.

Function

Script:

```
#!/bin/bash

function greet() {
    echo "Hello Ram"
}

greet
```

Explanation: Reusable code block.

Arguments

Script:

```
#!/bin/bash
```

```
echo "File name is $0"  
echo "First argument is $1"
```

Explanation: Passing arguments.

Connectivity Check

Script:

```
#!/bin/bash  
host=8.8.8.8  
  
if ping -c 1 $host > /dev/null  
then  
    echo "Connected"  
else  
    echo "Not connected"  
fi
```

Explanation: Check internet connectivity.

Redirection

Script:

```
#!/bin/bash  
  
echo "Logging this" > log.txt
```

Explanation: Redirect output.

Logging

Script:

```
#!/bin/bash  
  
LOG="/var/log/script.log"
```

```
echo "Script started at $(date)" >> $LOG
```

Explanation: Save logs.

Debugging

Script:

```
#!/bin/bash  
set -x
```

```
echo "Debug mode on"
```

Explanation: Debug script.

Cron

Script:

```
crontab -e
```

```
*/5 * * * * /home/script.sh
```

Explanation: Automate script.