

Shell Scripting for Students: Learn Bash From Scratch

1. What is Linux, Terminal, and Shell?

Linux Kya Hai? (The Playground)

Suno! Jaise aap ke mobile mein Android hota hai aur computer mein Windows hoti hai, bilkul waise hi **Linux** bhi ek operating system (OS) hai jisse computer chalta hai. Lekin Linux ki khaas baat ye hai ke ye aam computer se zyaada smart hota hai. Cyber security ke saare bade bade hackers aur experts Linux hi use karte hain kyunki isme hum computer ke andar tak ghus kar apni marzi ke kaam karwa sakte hain.

Terminal Kya Hai? (The Magic Black Box)

Aam taur par aap computer kaise chalte ho? Mouse se click-click kar ke, ya mobile par touch kar ke. Ise kehte hain GUI (Graphical User Interface). Lekin Linux mein ek jaadooii kaali screen hoti hai jahan mouse kaam nahi karta! Wahan hume jo bhi kaam karwana ho, hume keyboard se likh kar (Type kar ke) bolna parta hai. Us kaali screen ko hum **Terminal** ya **Command Line** kehte hain.

Shell Kya Hai? (The Translator)

Computer ek ajeeb sa system hai, use hamari normal zabaan samajh nahi aati. Wo bas `0` aur `1` samajhta hai. To Terminal ke andar ek translator baitha hota hai jise hum **Shell** kehte hain. Jab aap Terminal par kuch likhte ho, to Shell usko jaldi se computer ki zabaan mein badal kar computer ko samjhata hai ke *"Bhai, ye student ye kaam keh raha hai, jaldi se kar do!"* Linux mein sab se zyaada use hone wale Shell ka naam hai **Bash** (Bourne Again Shell).

Shell Scripting Kya Hai? (The Recipe Book)

Socho aap ko ek sath bohot saare kaam karne hain. Agar aap wo saari instructions ek file mein line-by-line pehle se likh kar rakh do, aur computer unhe ek ke baad ek khud hi chala de, to us file ko hum **Shell Script** kehte hain!

Asan Misaal:

Socho aap ko subah uth kar 4 kaam karne hote hain: Bed theek karna, brush karna, nashta karna, aur college jana. Agar aap roz ye 4 instructions ek parchi par likh kar rakh do aur subah bas wo parchi computer ko pakra do aur wo khud hi saare kaam kar de — to wo parchi aapki Shell Script hai!

2. Your First Bash Script (The Hello World Magic)

Chalo, ab hum computer se apna pehla jaadoo karwate hain. Hum chahte hain computer screen par hamara naam ya "Hello World!" chala kar dikhaye.

Aap ne Terminal kholna hai aur ek nayi file banani hai jiska naam rakhna hai `student_script.sh`. (Yaad rakhna, har script ke naam ke aakhir mein `.sh` lagana zaroori hai, taake computer ko pata chale ye script file hai).

Us file ke andar aap ne sirf ye 2 lines likhni hain:

```
#!/bin/bash
echo "Hello World!"
```

Chalo, Ek Ek Word Ka Matlab Samjho!

- **# (Hashtag) aur ! (Exclamation Mark):** In dono ko jan sath milaya jata hai `#!` to isko programming ki duniya mein **Shebang** (Shee-bang) bolte hain.
- **/bin/bash** : Ye computer ko rasta batata hai ke *"Suno computer! Is file ko chalane ke liye jo Bash naam ka translator hai na, wo /bin/bash wale folder mein baitha hai, usko bulao!"*
- **echo** : Iska kaam screen par kuch bhi print ya show karna hota hai. Jo bhi aap `echo` ke aage likhoge, wo screen par dikh dikhayega.
- **"Hello World!"** : Jo bhi cheez aap in double quotes `" "` ke andar likhoge, `echo` use bilkul waise ka waisa screen par dikha dega.

3. What is Automation? (The Robot Servant)

Automation ka simple matlab hai: **"Apna kaam computer se khud-ba-khud karwana aur apna time bachana!"**

Socho aap ek bade cyber security expert ho. Aap ko roz subah uth kar computer mein ye kaam karne parte hain: Internet ki speed check karna, apni website ka back-up lena, aur report file banana. Agar aap roz khud baith kar click-click karoge, to aap ka time zaya hoga. Hum kya karte hain? Hum ek Bash Script likhte hain jisme ye saare kaam likh dete hain aur computer khud hi saare kaam perfect timing par kar deta hai. Isay kehte hain **Automation**.

4. What are Variables? (The Data Boxes)

Variables ko aap samajh lo **Dabbe (Boxes)**. Ek aisa dabba jiske upar aap ek naam likh dete ho aur andar koi cheez (data) chupa kar rakh dete ho. Jab bhi aap ko wo cheez chahiye hoti hai, aap us dabbe ka naam lete ho.

Bash Scripting mein dabba (variable) aise banate hain:

```
naam="Syed Ghous"  
score=100
```

Yahan `naam` ek dabba hai jisme "Syed Ghous" chupa hai. Aur `score` ek aur dabba hai jisme number 100 chupa hai.

Dabbe Se Cheez Bahar Kaise Nikalni Hai? (\$ Ka Jaadoo)

Dabbe ke andar jhaankne ke liye hamein uske naam se pehle `$` (**Dollar Sign**) lagana parta hai. Dollar ka matlab hai: *"Is dabbe ke andar jo chupa hai, wo nikal kar dikhao!"*

Chalo is script ko dekho:

```
#!/bin/bash  
naam="Syed Ghous"  
echo "Yoo! Mera naam $naam hai."
```

Screen Par Output Kya Aayega?

`Yoo! Mera naam Syed Ghous hai.` (Computer ne `$naam` ki jagah dabbe ke andar rakha hua asli naam dikha diya!)

⚠ Important Rule for Students:

Jab aap variable bana rahe ho (jaise `naam="Ghous"`), to naam aur `=` ke beech mein **space (khali jagah) bilkul nahi chorni**. Agar space di, to computer error de dega!

5. What are Loops? (Baar Baar Ek Hi Kaam Karna)

Loop ka matlab hai "**Chakkar**". Programming mein jab hum computer ko bolte hain ke *"Ek hi kaam ko baar-baar karo jab tak ek khaas ginti पूरी na ho jaye"*, to use Loop kehte hain.

For Loop (Ginti Wala Loop)

Jab hamein pehle se pata ho ke koi kaam kitni dafa (how many times) karna hai, to hum **For Loop** lagate hain.

```
#!/bin/bash  
for ginti in {1..5}  
do  
    echo "Chakkar number $ginti: Bash Scripting Bohat Asan Hai!"  
done
```

Chalo, Iska Matlab Samjho!

- **for ginti in {1..5}** : Ye computer ko keh raha hai ke ginti 1 se shuru karo aur 5 tak jao. Aur har chakkar mein ginti ka number **ginti** naam ke dabbe mein daal do.
- **do** : Iska matlab hai "Shuru ho jao, ye niche wala kaam karo."
- **done** : Iska matlab hai "Bas 5 chakkar poore ho gaye, ab ruk jao."

Screen Par Output Kaisa Dikhega?

```
Chakkar number 1: Bash Scripting Bohat Asan Hai!  
Chakkar number 2: Bash Scripting Bohat Asan Hai!  
Chakkar number 3: Bash Scripting Bohat Asan Hai!  
Chakkar number 4: Bash Scripting Bohat Asan Hai!  
Chakkar number 5: Bash Scripting Bohat Asan Hai!
```

Quick Summary for Revision

Word	Asan Matlab (Student Definition)
Linux	Ek secure OS jo hackers aur cyber experts use karte hain.
Terminal	Wo kaali screen jahan saari commands type ki jaati hain.
Shell (Bash)	Ek translator jo terminal par hamari commands computer ko samjhata hai.
Script	Ek file jisme bohaat saari commands line-by-line pehle se liye hoti hain.
echo	Computer ka loudspeaker (screen par kuch bhi dikhane ke liye).
Variable (\$)	Ek data store karne wala dabba jisme koi value rakhi jati hai.
Loop	Ek hi kaam ko baar-baar repeat karne ka tarika.