BASH SCRIPTING FOR DEVOPS

Introduction to Bash Scripting

Bash scripting is the process of writing scripts using the **Bash (Bourne Again Shell)** command-line interpreter. It automates tasks, manages system operations, and enhances DevOps workflows.

1. Why Use Bash Scripting?

- Automates repetitive tasks
- Simplifies system administration
- Enhances DevOps and cloud workflows
- Easily integrates with tools like Docker, Kubernetes, Jenkins, and Ansible

2. Writing Your First Bash Script

1. **Create a new file**

```
nano myscript.sh
```

2. **Add the shebang (#!)**

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

3. **Give execute permissions**

```
chmod +x myscript.sh
```

4. **Run the script**

```
./myscript.sh
```

3. Variables in Bash

```
name="DevOps Engineer"
echo "Hello, $name!"
```

Reading User Input

```
echo "Enter your name:"
read user_name
echo "Welcome, $user_name!"
```

Command Substitution

```
current_date=$(date)
echo "Today's date is $current_date"
```

4. Conditional Statements

If-Else

```
#!/bin/bash
echo "Enter a number:"
read num
if [ $num -gt 10 ]; then
    echo "The number is greater than 10"
else
    echo "The number is 10 or less"
fi
```

Case Statement

```
#!/bin/bash
echo "Enter a choice: start, stop, or restart"
read choice
case $choice in
    start)
        echo "Starting service..."
        ;;
    stop)
        echo "Stopping service..."
        ;;
    restart)
        echo "Restarting service..."
        ;;
    *)
        echo "Invalid choice"
        ;;
esac
```

5. Loops in Bash

For Loop

```
for i in {1..5}; do
    echo "Iteration $i"
done
```

While Loop

```
bash
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count=1
while [ $count -le 5 ]; do
    echo "Count: $count"
    ((count++))
done
```

6. Functions in Bash

```
function greet() {
    echo "Hello, $1!"
}
greet "DevOps"
```

7. Working with Files

Check if a file exists

```
file="test.txt"
if [ -f "$file" ]; then
    echo "$file exists"
else
    echo "$file does not exist"
fi
```

Reading a File Line by Line

```
while IFS= read -r line; do
    echo "$line"
done < myfile.txt
```

8. DevOps Use Cases

- **Automating Deployments:** Writing scripts to automate Kubernetes deployments
- **System Monitoring:** Creating health check scripts for servers
- **Log Management:** Extracting and processing logs automatically
- **Backup Automation:** Scheduling backups for databases and files

9. Advanced Bash Concepts

- **Using Arrays**

```
fruits=("Apple" "Banana" "Cherry")
echo "First fruit: ${fruits[0]}"
```

- **Working with Background Jobs**

```
./long_task.sh &
```

10. Debugging Bash Scripts

- **Run in debug mode**

```
bash -x script.sh
```

- **Check for syntax errors**

```
bash -n script.sh
```

Conclusion

Bash scripting is an essential skill for DevOps, SRE, and automation tasks. Mastering it will help you in managing infrastructure, automating tasks, and improving system efficiency.

Thank you for reading……