USER DEFINED VARIABLES

Basic Variable Declaration and Display

```
#!/bin/bash

# Example 1: Using user-defined variables


name="Anmol"

age=25

city="Pune"


echo "Name: $name"

echo "Age: $age"

echo "City: $city"
```

✅ **Output:**

```
Name: Anmol

Age: 25

City: Pune
```

⚙️ 2️⃣ **Using Variables in a Sentence**

```
#!/bin/bash

# Example 2: String concatenation using variables


first_name="Anmol"

last_name="Pattanaik"


echo "Hello, my name is $first_name $last_name."
```

✅ **Output:**

```
Hello, my name is Anmol Pattanaik.
```

🧠 3️⃣ **Using Variables for Arithmetic Calculation**

```
#!/bin/bash

# Example 3: Arithmetic using user-defined variables
```

```
num1=10
num2=5
sum=$((num1 + num2))

echo "The sum of $num1 and $num2 is $sum"
```

✅ **Output:**

```
The sum of 10 and 5 is 15
```

🕹️ 4️⃣ **Using User Input to Assign Variables**

```
#!/bin/bash
# Example 4: User input stored in variables

echo "Enter your name:"
read name

echo "Enter your favorite color:"
read color

echo "Hello $name, your favorite color is $color!"
```

✅ **Output:**

```
Enter your name:
Anmol
Enter your favorite color:
Blue
Hello Anmol, your favorite color is Blue!
```

🔁 5️⃣ **Variable Manipulation Example**

```
#!/bin/bash
# Example 5: Changing variable values
```

```
count=1
echo "Initial count: $count"

count=$((count + 4))
echo "Updated count: $count"
```

✅ **Output:**

```
Initial count: 1
Updated count: 5
```

🧮 6️⃣ **Example Using Variables in a Small Script**

```
#!/bin/bash
# Example 6: Calculate total and average marks

name="Student1"
mark1=85
mark2=90
mark3=80

total=$((mark1 + mark2 + mark3))
average=$((total / 3))

echo "Name: $name"
echo "Total Marks: $total"
echo "Average Marks: $average"
```

✅ **Output:**

```
Name: Student1
Total Marks: 255
Average Marks: 85
```

ARITHMETIC OPERATORS:

1️⃣ Basic Arithmetic Operations

```
#!/bin/bash

# Example 1: Basic arithmetic operations


a=20

b=5


echo "Addition: $((a + b))"

echo "Subtraction: $((a - b))"

echo "Multiplication: $((a * b))"

echo "Division: $((a / b))"

echo "Modulus: $((a % b))"
```

✅ **Output:**

```
Addition: 25

Subtraction: 15

Multiplication: 100

Division: 4

Modulus: 0
```

🔢 2️⃣ Arithmetic Using User Input

```
#!/bin/bash

# Example 2: Arithmetic with user input


echo "Enter first number:"

read num1

echo "Enter second number:"

read num2


sum=$((num1 + num2))
```

```
echo "The sum is: $sum"
```

✅ **Output:**

```
Enter first number:
8
Enter second number:
12
The sum is: 20
```

🧠 3️⃣ **Using expr Command for Arithmetic**

```
#!/bin/bash
# Example 3: Arithmetic using expr command

x=10
y=4

sum=`expr $x + $y`
product=`expr $x \* $y`

echo "Sum = $sum"
echo "Product = $product"
```

✅ **Output:**

```
Sum = 14
Product = 40
```

⚙️ 4️⃣ **Increment and Decrement Operators**

```
#!/bin/bash
# Example 4: Increment and Decrement

num=10
echo "Initial value: $num"
```

((num++))

echo "After increment: $num"

((num--))

echo "After decrement: $num"

✅ **Output:**

Initial value: 10

After increment: 11

After decrement: 10

📊 5️⃣ **Calculate Average of Three Numbers**

#!/bin/bash

Example 5: Average calculation

a=50

b=60

c=70

total=$((a + b + c))

average=$((total / 3))

echo "Total = $total"

echo "Average = $average"

✅ **Output:**

Total = 180

Average = 60

⚡ 6️⃣ **Check Even or Odd Using Modulus**

#!/bin/bash

Example 6: Even or Odd

```
echo "Enter a number:"
read n

if (( n % 2 == 0 ))
then
   echo "$n is even."
else
   echo "$n is odd."
fi
```

✅ **Output:**

```
Enter a number:
7
7 is odd.
```

📜 7️⃣ **Power Calculation**

```
#!/bin/bash
# Example 7: Power of a number

base=3
power=4

result=$((base ** power))
echo "$base raised to $power is $result"
```

✅ **Output:**

```
3 raised to 4 is 81
```

CONDITIONAL STATEMENTS

1️⃣ **Basic if Statement**

```
#!/bin/bash
# Example 1: Simple if statement

num=10
```

```
if [ $num -gt 5 ]
then
  echo "Number is greater than 5"
fi
```

✅ **Output:**

```
Number is greater than 5
```

⚙️ 2️⃣ **if-else Statement**

```
#!/bin/bash
# Example 2: if-else statement

echo "Enter a number:"
read num

if [ $num -ge 0 ]
then
  echo "The number is positive."
else
  echo "The number is negative."
fi
```

✅ **Output:**

```
Enter a number:
-4
The number is negative.
```

🔁 3️⃣ **if-elif-else Statement**

```
#!/bin/bash
# Example 3: if-elif-else ladder

echo "Enter your marks:"
```

```
read marks

if [ $marks -ge 90 ]
then
  echo "Grade: A"
elif [ $marks -ge 75 ]
then
  echo "Grade: B"
elif [ $marks -ge 50 ]
then
  echo "Grade: C"
else
  echo "Grade: Fail"
fi
```

✅ **Output:**

```
Enter your marks:
82
Grade: B
```

🔢 🔄 **Check Even or Odd**

```
#!/bin/bash
# Example 4: Check even or odd using if-else

echo "Enter a number:"
read n

if (( n % 2 == 0 ))
then
  echo "$n is even."
else
  echo "$n is odd."
```

```
fi
```

✅ **Output:**

```
Enter a number:
9
9 is odd.
```

📁 5️⃣ **Check if File Exists**

```
#!/bin/bash
# Example 5: File existence check

echo "Enter filename:"
read filename

if [ -f "$filename" ]
then
   echo "File $filename exists."
else
   echo "File $filename not found."
fi
```

✅ **Output:**

```
Enter filename:
test.txt
File test.txt exists.
```

🧠 6️⃣ **Compare Two Numbers**

```
#!/bin/bash
# Example 6: Compare two numbers

echo "Enter first number:"
read a
echo "Enter second number:"
```

```
read b

if [ $a -gt $b ]
then
   echo "$a is greater than $b"
elif [ $a -lt $b ]
then
   echo "$a is less than $b"
else
   echo "Both numbers are equal"
fi
```

⚡ 7️⃣ **case Statement (Alternative to if-else)**

```
#!/bin/bash
# Example 7: Using case statement

echo "Enter a number between 1 and 3:"
read num

case $num in
   1) echo "You selected One" ;;
   2) echo "You selected Two" ;;
   3) echo "You selected Three" ;;
   *) echo "Invalid choice" ;;
esac
```

✅ **Output:**

```
Enter a number between 1 and 3:
2
You selected Two
```