Shell Script

1. To convert given binary number into decimal number.

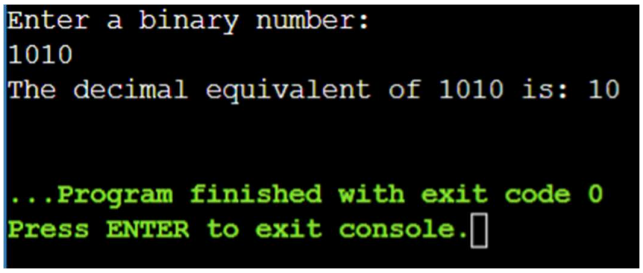
```
#!/bin/bash

echo "Enter a binary number: "
read binary

decimal=0
for ((i=${#binary}-1;i>=0;i--)); do
  bit=${binary:i:1}
  if [ "$bit" -eq 1 ]; then
    decimal=$((decimal + 2**((${#binary}-1-i))))
  fi
done

echo "The decimal equivalent of $binary is: $decimal"
```

OUTPUT:



2. To accept the strings & to reverse the string.

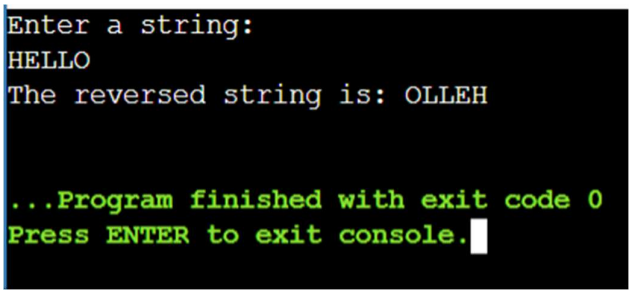
```
#!/bin/bash

# Prompt the user to enter a string
echo "Enter a string: "
read string
```

```
# Reverse the string using a loop
reverse=""
for ((i=${#string}-1;i>=0;i--)); do
  reverse="$reverse${string:$i:1}"
done

# Output the reversed string
echo "The reversed string is: $reverse"
```

OUTPUT



3. To design a calculator using command line arguments.

```
#!/bin/bash

# Check if there are at least 3 arguments
if [ $# -lt 3 ]; then
    echo "Usage: $0 <operator> <operand1> <operand2>"
    exit 1
fi

# Parse the arguments
operator=$1
operand1=$2
operand2=$3
```

```
# Perform the operation based on the operator
case $operator in
   "+")
      result=$(echo "$operand1 + $operand2" | bc)
      ;;
   "-")
      result=$(echo "$operand1 - $operand2" | bc)
      ;;
   "*")
      result=$(echo "$operand1 * $operand2" | bc)
      ;;
   "/")
      result=$(echo "$operand1 / $operand2" | bc)
      ;;
   "%")
      result=$(echo "$operand1 % $operand2" | bc)
      ;;
   *)
      echo "Error: Invalid operator"
      exit 1
      ;;
esac

# Print the result
echo "$operand1 $operator $operand2 = $result"
```

OUTPUT

bash Copy code

```
./calculator.sh + 5 3
```

This will output:

Copy code

```
5 + 3 = 8
```

4. To write a function to calculate the factorial of a number.

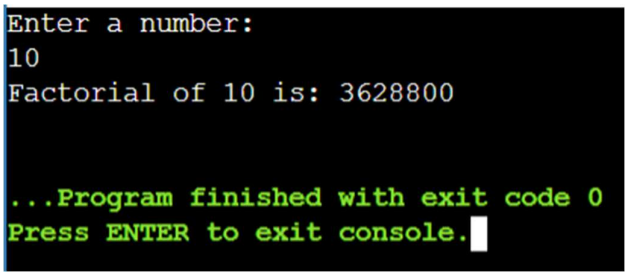
```
#!/bin/bash

# Define the factorial function
factorial() {
  if [ $1 -eq 0 ]; then
    echo 1
  else
    prev=$(factorial $(($1 - 1)))
    echo $(($1 * $prev))
  fi
}

# Prompt the user to enter a number
echo "Enter a number: "
read num

# Call the factorial function and output the result
result=$(factorial $num)
echo "Factorial of $num is: $result"
```

OUTPUT



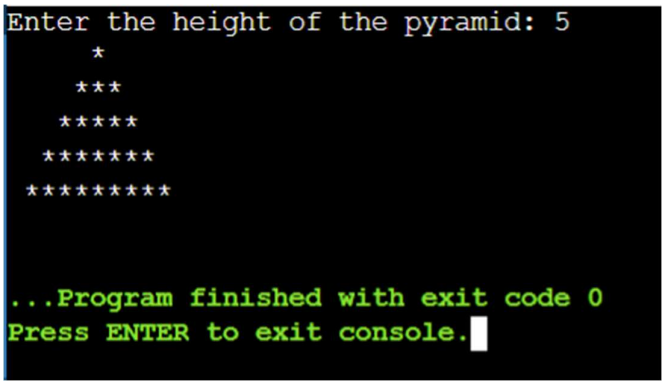
5. To print the pyramid of *

```
#!/bin/bash

# Get the height of the pyramid from the user
read -p "Enter the height of the pyramid: " height

# Print the pyramid
for (( i=1; i<=height; i++ )); do
    # Print spaces on the left
    for (( j=i; j<=height; j++ )); do
        echo -n " "
    done
    # Print asterisks in the middle
    for (( j=1; j<=(2*i-1); j++ )); do
        echo -n "*"
    done
    # Print spaces on the right
    for (( j=i; j<=height; j++ )); do
        echo -n " "
    done
    # Move to the next line
    echo
done
```

OUTPUT:


Enter the height of the pyramid: 5
*
***
*****
****
****
...Program finished with exit code 0
Press ENTER to exit console.