Assignment-7
Shell Scripting with Bash

Assignment 1: Ensure the script checks if a specific file (e.g., myfile.txt) exists in the current directory. If it exists, print "File exists", otherwise print "File not found".

Answer: Below are the commands:

```
#!/bin/bash
filename="myfile.txt"
if [ -f "$filename" ]; then
echo "File exists"
else
echo "File not found"
fi
```

Assignment 2: Write a script that reads numbers from the user until they enter '0'. The script should also print whether each number is odd or even.

Answer: Below are the commands:

```
#!/bin/bash
read -p "Enter a number 0 to quit: " number
while [[ $number -ne 0 ]]; do
# Check if the number is even using modulo operator (%)
If (( number % 2 == 0 )); then
echo "$number is even"
```

```
else echo "$number is odd"
fi
read -p "Enter a number (0 to quit): " number
done
echo "Exiting..."
```

Assignment 3: Create a function that takes a filename as an argument and prints the number of lines in the file. Call this function from your script with different filenames.

Answer: Below are the commands:

```
#!/bin/bash
function count_lines {
filename="$1"
if [ -f "$filename" ]; then
line_count=$(wc -l < "$filename")
echo "$filename has $line_count lines."
else echo "File '$filename' not found."
fi
}
count_lines "myfile.txt"
count_lines "change_file.txt"
```

Assignment 4: Write a script that creates a directory named TestDir and inside it, creates ten files named File1.txt, File2.txt, ... File10.txt. Each file should contain its filename as its content (e.g., File1.txt contains "File1.txt").

Answer: Below are the commands:

```
#!/bin/bash
dir_name="TestDir"
num_files=10
if [ ! -d "$dir_name" ]; then
mkdir -p "$dir_name" || { echo "Error creating directory
'$dir_name'"; exit 1; }
fi
for i in $(seq 1 $num_files); do
filename="File$i.txt"
filepath="$dir_name/$filename"
# Create the file and write content (redirect to avoid overwriting)
echo "$filename" > "$filepath" || { echo "Error creating file
'$filepath'"; exit 1; }
done
echo "Created directory '$dir_name' with $num_files files."
```

Assignment 5: Modify the script to handle errors, such as the directory already existing or lacking permissions to create files.Add a debugging mode that prints additional information when enabled.

Answer: Below are the commands:

```
#!/bin/bash
# Directory name
dir_name="TestDir"
# Number of files
num_files=10
```

```bash
# Enable debugging mode (set to true for additional info)

debug_mode=false

# Function to print debug message

function debug_print { if [[ "$debug_mode" == true ]]; then
echo "[DEBUG] $1"
fi
}

# Check if directory already exists (informative message)

if [ -d "$dir_name" ]; then
echo "Directory '$dir_name' already exists. Skipping creation."
exit 0
fi

# Create the directory (handle errors)

debug_print "Creating directory: $dir_name"
if ! mkdir -p "$dir_name"; then
echo "Error: Insufficient permissions to create directory '$dir_name'."
exit 1
fi

# Loop to create files with unique content

for i in $(seq 1 $num_files); do
```

filename="File$i.txt"
filepath="$dir_name/$filename"

# Create the file and write content (redirect to avoid overwriting)

debug_print "Creating file: $filepath"
if ! echo "$filename" > "$filepath"; then
echo "Error creating file '$filepath'."
exit 1
fi
done
echo "Created directory '$dir_name' with $num_files files.

Assignment 6: Given a sample log file, write a script using grep to extract all lines containing "ERROR". Use awk to print the date, time, and error message of each extracted line.Data Processing with sed

Answer: Below are the commands:

#!/bin/bash
# Define the log file path
log_file="sample.log"

<u># Use grep to extract lines containing "ERROR" and then use awk to print date, time, and error messagegrep "ERROR" "$log_file" | awk '{print $1, $2, substr($0, index($0,$4))}'</u>

Explanation:

• grep "ERROR" "$log_file": This command searches for lines containing "ERROR" in the specified
log file.
• awk '{print $1, $2, substr($0, index($0,$4))}': This awk command is used to extract the date, time,
and error message from each line containing "ERROR".
• $1 and $2 represent the first and second fields, which are the date and time.
• substr($0, index($0,$4)) extracts the error message starting from the fourth field (which is the
timestamp). This ensures that even if the error message contains spaces, it is printed entirely.

Assignment 7: Create a script that takes a text file and replaces all occurrences of "old_text" with "new_text". Use sed to perform this operation and output the result to a new file.

Answer: Below are the commands:

```
#!/bin/bash
# Get the old and new text from the user.
echo "Enter the old text to be replaced:"
read old_text
echo "Enter the new text:"
read new_text

# Get the input and output file names from the user.

echo "Enter the input file name:"
```

```
read input_file
echo "Enter the output file name:"
read output_file

# Replace all occurrences of "old_text" with "new_text" in the input file
and output the result to the output file.

sed "s/$old_text/$new_text/g" $input_file > $output_file

# Print a message to the user.

echo "The replacement is complete. The output file is $output_file."
```