1 Write a shell script which will generate the O/P as follows

```
*
**
***
****
```

Ans: vim stars.sh

```
#!/bin/bash

for i in {1..4}
do
  for j in $(seq 1 $i)
  do
    echo -n "*"
  done
  echo ""
done
```

2 Accept the first name, middle name, and last name of a person in variables fname, mname and lname respectively. Greet the person (take his full name) using appropriate message.

Ans:

vim greet.sh

```
#!/bin/bash


# Accept the first name, middle name, and last name
echo "Enter your first name:"
read fname
echo "Enter your middle name:"
read mname
echo "Enter your last name:"
read lname
```

```
# Greet the person
echo "Hello, $fname $mname $lname! Welcome!"
```

3 Display the name of files in the current directory along with the names of files with maximum & minimum size. The file size is considered in bytes.

Ans: vim file_sizes.sh

```
#!/bin/bash

# List all files in the current directory
echo "Files in the current directory:"
ls -1

# Find the file with the maximum size
max_file=$(ls -S | head -n 1)
max_size=$(stat -c%s "$max_file")

# Find the file with the minimum size
min_file=$(ls -S | tail -n 1)
min_size=$(stat -c%s "$min_file")

# Display the file with the maximum size
echo "File with the maximum size: $max_file ($max_size bytes)"

# Display the file with the minimum size
echo "File with the minimum size: $min_file ($min_size bytes)"
```

4 Write a script which when executed checks out whether it is a working day or not?

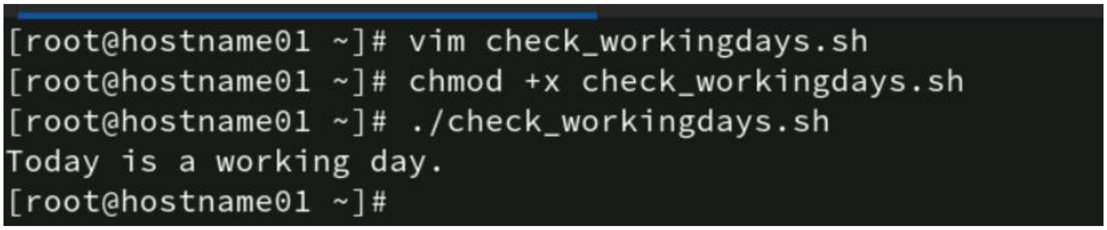
(Note: Working day Mon-Fri)

Ans:vim check_workingdays.sh

```
#!/bin/bash
```

```
# Get the current day of the week (1-7, where 1 is Monday and 7 is Sunday)
day_of_week=$(date +%u)

# Check if the day is a working day (Monday to Friday)
if [ "$day_of_week" -ge 1 ] && [ "$day_of_week" -le 5 ]; then
  echo "Today is a working day."
else
  echo "Today is not a working day."
fi
```



```
[root@hostname01 ~]# vim check_workingdays.sh
[root@hostname01 ~]# chmod +x check_workingdays.sh
[root@hostname01 ~]# ./check_workingdays.sh
Today is a working day.
[root@hostname01 ~]#
```

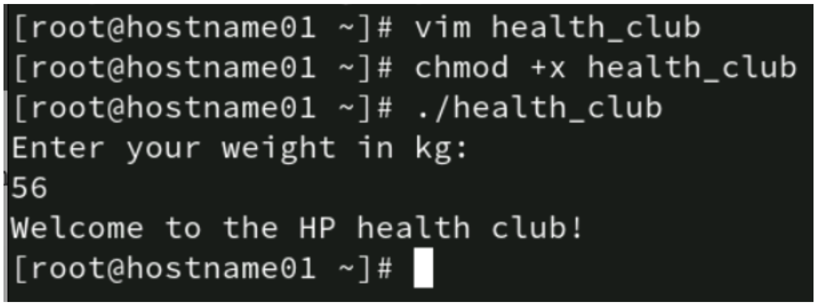
5 Write a script that accepts a member into HP health club, if the weight of the person is withing the range of 30-250 Kgs.

Ans: vim health_club

```
#!/bin/bash

# Prompt the user to enter their weight
echo "Enter your weight in kg:"
read weight

# Check if the weight is within the acceptable range
if [ "$weight" -ge 30 ] && [ "$weight" -le 250 ]; then
  echo "Welcome to the HP health club!"
else
  echo "Sorry, your weight is not within the acceptable range for membership."
fi
```



```
[root@hostname01 ~]# vim health_club
[root@hostname01 ~]# chmod +x health_club
[root@hostname01 ~]# ./health_club
Enter your weight in kg:
56
Welcome to the HP health club!
[root@hostname01 ~]# 
```

6 Write a shell script that greets the user with an appropriate message depending on the system time.

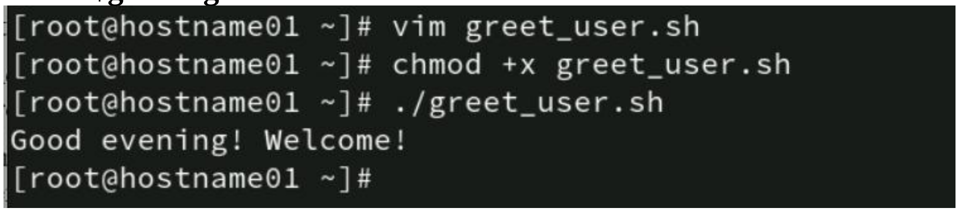
Ans: vim greet_user.sh

```
#!/bin/bash

# Get the current hour (0-23)
current_hour=$(date +%H)

# Determine the appropriate greeting based on the current hour
if [ "$current_hour" -ge 5 ] && [ "$current_hour" -lt 12 ]; then
  greeting="Good morning"
elif [ "$current_hour" -ge 12 ] && [ "$current_hour" -lt 17 ]; then
  greeting="Good afternoon"
elif [ "$current_hour" -ge 17 ] && [ "$current_hour" -lt 21 ]; then
  greeting="Good evening"
else
  greeting="Good night"
fi

# Greet the user
echo "$greeting! Welcome!”
```



```
[root@hostname01 ~]# vim greet_user.sh
[root@hostname01 ~]# chmod +x greet_user.sh
[root@hostname01 ~]# ./greet_user.sh
Good evening! Welcome!
[root@hostname01 ~]#
```

7 A data file file has some student records including rollno, names and subject marks. The fields are separated by a “:”. Write a shell script that accepts roll number from the user,

searches it in the file and if the roll number is present - allows the user to modify name and marks in 3 subjects.
If the roll number is not present, display a message “Roll No Not Found”. Allow the user to modify one record at a time.

Ans: vim update_student.sh

```
#!/bin/bash

# File containing student records
data_file="students.txt"

# Prompt the user to enter the roll number
echo "Enter the roll number:"
read rollno

# Search for the roll number in the file
record=$(grep "^$rollno:" "$data_file")

if [ -z "$record" ]; then
  echo "Roll No Not Found"
else
  # Display the current record
  echo "Current record: $record"

  # Prompt the user to enter the new name and marks
  echo "Enter the new name:"
  read new_name
  echo "Enter the new marks for subject 1:"
  read new_marks1
  echo "Enter the new marks for subject 2:"
  read new_marks2
  echo "Enter the new marks for subject 3:"
  read new_marks3
  # Create the new record
  new_record="$rollno:$new_name:$new_marks1:$new_marks2:$new_marks3"
  # Replace the old record with the new record in the file
  sed -i "s/^$rollno:.*/$new_record/" "$data_file"

  echo "Record updated successfully."
fi
```

8 Modify program 7 to accept the RollNo from the command line.

Ans: vim update_student.sh

```
#!/bin/bash

# File containing student records
data_file="students.txt"

# Check if the roll number is provided as a command-line argument
if [ -z "$1" ]; then
  echo "Usage: $0 <rollno>"
  exit 1
fi

# Get the roll number from the command-line argument
rollno=$1

# Search for the roll number in the file using grep
record=$(grep "^$rollno:" "$data_file")

if [ -z "$record" ]; then
  echo "Roll No Not Found"
else
  # Display the current record
  echo "Current record: $record"
  # Prompt the user to enter the new name and marks
  echo "Enter the new name:"
  read new_name
  echo "Enter the new marks for subject 1:"
  read new_marks1
  echo "Enter the new marks for subject 2:"
  read new_marks2
  echo "Enter the new marks for subject 3:"
  read new_marks3

  # Create the new record
  new_record="$rollno:$new_name:$new_marks1:$new_marks2:$new_marks3"

  # Replace the old record with the new record in the file using sed
  sed -i "s/^$rollno:.*/$new_record/" "$data_file"

  echo "Record updated successfully."
fi
```

9 Modify the program 7 to accept the RollNo and display the record and ask for delete confirmation. Once confirmed delete the record and update the data file.

Ans: 1.vim delete_student.sh

```
#!/bin/bash

# File containing student records
data_file="students.txt"

# Check if the roll number is provided as a command-line argument
if [ -z "$1" ]; then
  echo "Usage: $0 <rollno>"
  exit 1
fi

# Get the roll number from the command-line argument
rollno=$1

# Search for the roll number in the file using grep
record=$(grep "^$rollno:" "$data_file")

if [ -z "$record" ]; then
  echo "Roll No Not Found"
else
  # Display the current record
  echo "Current record: $record"

  # Ask for delete confirmation
  echo "Do you want to delete this record? (yes/no)"
  read confirmation

  if [ "$confirmation" = "yes" ]; then
    # Delete the record from the file using sed
    sed -i "/^$rollno:/d" "$data_file"
    echo "Record deleted successfully."
  else
    echo "Deletion cancelled."
  fi
fi
```

```
2.chmod +x delete_student.sh
3. ./delete_student.sh
```

10 Write a script that takes a command line argument and reports on its file type (regular file, directory file, etc.). For more than one argument generate error message.

Ans:

```
1] vim file_type.sh
#!/bin/bash

# Check if more than one argument is provided
if [ "$#" -ne 1 ]; then
  echo "Usage: $0 <filename>"
  exit 1
fi

# Get the filename from the command-line argument
filename=$1

# Check if the file exists
if [ ! -e "$filename" ]; then
  echo "File does not exist."
  exit 1
fi

# Determine the file type
if [ -f "$filename" ]; then
  echo "$filename is a regular file."
elif [ -d "$filename" ]; then
  echo "$filename is a directory."
elif [ -L "$filename" ]; then
  echo "$filename is a symbolic link."
else
  echo "$filename is of another file type."
fi
2] chmod  +x  file_type.sh
3] ./file_type.sh  <filename>
```

11 Add some student records in the “student” file manually. The fields to be considered are “RollNo”, “Name”, “Marks_Hindi”, “Marks_Maths”, “Marks_Physics”.
Write a script which does the following

a If the roll number already exists, then store the record and the following message “roll number exists” in a log file “log1”.

b If the marks in the subjects is not in the range of 1 – 99 then store such a record followed by a message “marks out of range” in “log1”

c If the data is valid, the calculate total, percentage, grade and display on the terminal

Ans:

```
vim  student_records.sh
#!/bin/bash

# File containing student records
data_file="student"
log_file="log1"

# Function to calculate grade based on percentage
calculate_grade() {
  local percentage=$1
  if (( $(echo "$percentage >= 90" | bc -l) )); then
    echo "A"
  elif (( $(echo "$percentage >= 80" | bc -l) )); then
    echo "B"
  elif (( $(echo "$percentage >= 70" | bc -l) )); then
    echo "C"
  elif (( $(echo "$percentage >= 60" | bc -l) )); then
    echo "D"
  else
    echo "F"
  fi
}

# Prompt the user to enter student details
echo "Enter Roll Number:"
```

```
read rollno
echo "Enter Name:"
read name
echo "Enter Marks in Hindi:"
read marks_hindi
echo "Enter Marks in Maths:"
read marks_maths
echo "Enter Marks in Physics:"
read marks_physics

# Check if the roll number already exists
if grep -q "^$rollno:" "$data_file"; then
  echo "$rollno:$name:$marks_hindi:$marks_maths:$marks_physics" >> "$log_file"
  echo "roll number exists" >> "$log_file"
  echo "Roll number exists. Logged in $log_file."
  exit 1
fi

# Check if the marks are in the valid range
if [ "$marks_hindi" -lt 1 ] || [ "$marks_hindi" -gt 99 ] || [ "$marks_maths" -lt 1 ] || [ "$marks_maths" -gt 99 ] || [ "$marks_physics" -lt 1 ] || [ "$marks_physics" -gt 99 ]; then
  echo "$rollno:$name:$marks_hindi:$marks_maths:$marks_physics" >> "$log_file"
  echo "marks out of range" >> "$log_file"
  echo "Marks out of range. Logged in $log_file."
  exit 1
fi

# Calculate total, percentage, and grade
total=$((marks_hindi + marks_maths + marks_physics))
percentage=$(echo "scale=2; $total / 3" | bc)
grade=$(calculate_grade "$percentage")

# Display the results
```

```
echo "Total Marks: $total"
echo "Percentage: $percentage%"
echo "Grade: $grade"

# Append the valid record to the data file
echo "$rollno:$name:$marks_hindi:$marks_maths:$marks_physics:$total:$percentage:$grade" >> "$data_file"
```

2] chmod +x student_records.sh

3] ./student_records.sh