SEQUENCES PRACTICE PROBLEMS

Q1.> Use Random Function ((RANDOM)) to get Single Digit

A.> step1> Create a .sh file

```
touch RandomNum.sh
```

step2> Write logic in the bash file

```
#!/bin/bash -x
RandomNUmGen=$(( RANDOM%10 ))
echo $RandomNUmGen
```

step3> give .sh file executable permission and then run the bash file to get outcome

```
chmod +x RandomNum.sh
./RandomNum.sh
```

Q2.> Use Random to get Dice Number between 1 to 6

A.> step1.>create .sh file

```
touch RandomDice.sh
```

step2.> write logic in bash file

```
#!/bin/bash -x
DiceNum=$(( RANDOM%6 ))
if [ $DiceNum -ne 0 ]
  then
    echo $DiceNum;
fi
```

step3.> Run the bash file to get the outcome

```
./RandomDice.sh
```

Q3.> Add two Random Dice Number and Print the Result

A.> step1> Create a .sh file

```
touch RandomNumAdd.sh
```

step2> write logic in the bash file

```
#!/bin/bash -x
RandomNumOne=$(( RANDOM ));
RandomNumTwo=$(( RANDOM ));
RandomNum=$(( $RandomNumOne + $RandomNumTwo ));
echo $RandomNum
```

step3> Run the bash file to get outcome

```
./RandomNumAdd.sh
```

Q4.> Write a program that reads 5 Random 2 Digit values , then find their sum and the average

A.> step1> Create a .sh file

```
touch RandomSumAvg.sh
```

step2> write code in the bash file

```
#!/bin/bash -x
rows=5;
sum=0;
for ((i=1;i<=$rows;i++))
do
    random=$(( (RANDOM%6) + 10 ))
    sum=`expr $sum + $random`;
done
 avg=$( echo "scale=2;10$sum/$rows"|bc);
 echo $sum;
```

```
 echo $avg;
```

step3>> Run the bash file

```
./RandomSumAvg.sh
```

Q5.> Unit Conversion
a. 1ft = 12 in then 42 in = ? ft
b. Rectangular Plot of 60 feet x 40 feet in meters
c. Calculate area of 25 such plots in acres

A.> step1> Create a.sh file

```
touch UnitConversion.sh
```

step2> write logic in the bash file

```
#!/bin/bash
inch=42;
ft=$(( $inch/12 ))
echo "feet :" $ft;
############################
ft=$(( 60*40))
meters=`expr $ft | awk '{meter=$1/3.281} {print meter}'`
echo "meters :" $meters;
############################
meters=$((60*40*25))
acres=`expr $meters | awk '{acre=$1/4046.86} {print acre}'`
echo "acres :" $acres;
```

step3> run the bash file

```
./UnitConversion.sh
```

SELECTION PRACTICE PROBLEMS WITH IF & ELSE

Q1.> Write a program that takes day and month from the command line and prints true if
day of month is between March 20 and June 20, false otherwise
A.> step1>>Create a .sh file

```
touch DayMonthSelc.sh
```

step2>> write logic in bash file

```
#!/bin/bash
read -p "Enter month :" Month;
read -p "Enter date :" date;
if (( ($Month <= 6 && $date <= 20) && (($Month >= 3 && $date <= 20) &&
($date<31)) ))
then
echo "true";
else
echo "false";
fi
```

tep3>> Run the bash file

```
./DayMonthSelc.sh
```

Q2.> Write a program that takes a year as input and outputs the Year is a Leap Year or not
a Leap Year. A Leap Year checks for 4 Digit Number, Divisible by 4 and not 100 unless
divisible by 400.

A.>> step1>> create .sh file

```
touch FindLeapYear.sh
```

step2>> Write logic in the bash file

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

```
read -p "Enter year :" y;
if (( (y%4) == 0 ))
then
if (( (y%100) == 0 ))
then
if (( (y%400) == 0 ))
then
 echo $y ": is a leap year";
else
  echo $y ": is a not leap year";
fi
else
  echo $y ": is a not leap year";
fi
else
  echo $y ": is a not leap year";
fi
```

step3>> Run the program

```
   ./FindLeapYear.sh
```

Q3.> Write a program to simulate a coin flip and print out "Heads" or "Tails" accordingly

A.>> step1>> Create a .sh file

```
            touch HeadsTails.sh
```

step2>> write logic in the bash file

```
#!/bin/bash -x
isHead=1;
RandomCheck=$(( RANDOM%10 ))
if [ $isHead -eq $RandomCheck ]
then
echo "heads"
else
echo "tails"
fi
```

step3>> Run the program

```
         ./HeadsTails.sh
```

Q4.> Write a program that reads 5 Random 3 Digit values and then outputs the minimum
and the maximum value.

A.> step1>> Create a .sh File

```
   touch RandomMinMaxVal.sh
```

step2>> Write the logic in the bash file

```
 #!/bin/bash -x
read -p "Enter size of array : " size;
index=0;
for (( index;index<$size;index++ ))
do
    array[index]=$(( (RANDOM%6) + 100 ));
done

  echo "random values are : " ${array[*]};

max=${array[0]};
min=${array[0]};
for ((index=1;index<$size;index++))
do
    if  (( array[index]  >  $max ))
    then
        max=${array[index]};
```

```
     fi
     if (( array[index]  <  $min ))
     then
         min=${array[index]};
     fi
done
 echo "max is : " $max
 echo "min is : " $min
```

```
 step3>> run the program
     ./RandomMinMaxVal.sh
```

SELECTION PRACTICE PROBLEMS WITH CASE STATEMENT

Q1.> Read a single digit number and write the number in word using Case

A.> step1>> Create a .sh file

```
   touch CaseOne.sh
```

```
 step2>> Write logic in the bash file
 #!/bin/bash -x
read -p "Enter a number between 0 to 9" N;
case $N in
 0) echo "zero";;
 1) echo "one";;
 2) echo "two";;
 3) echo "three";;
 4) echo "four";;
 5) echo "five";;
 6) echo "six";;
 7) echo "seven";;
 8) echo "eight";;
 9) echo "nine";;
 *) echo "not a valid number";;
esac
```

```
step3>> Run the bash File
 ./CaseOne.sh
```

Q2.>Read a Number and Display the week day (Sunday, Monday,…)

A.> step1>> Create a .sh file

```
   touch CaseTwo.sh
```

```
 step2>> Write logic in the bash file
 #!/bin/bash -x
read -p "Enter a single digit number : " N;
case $N in
 1) echo "Sunday";;
 2) echo "Monday";;
 3) echo "Tuesday";;
 4) echo "Wednesday";;
 5) echo "Thursday";;
 6) echo "Friday";;
 7) echo "Saturday";;
 *) echo "No week day ";;
esac
```

```
 step3>> Run the bash File
 ./CaseTwo.sh
```

Q3.>Read a Number 1, 10, 100, 1000, etc and display unit, ten, hundred,…

A.> step1>> Create a .sh file

```
   touch CaseThree.sh
```

```
 step2>> Write logic in the bash file
```

```
 #!/bin/bash -x
read -p "Enter number to print unit ten hundered ... : " N;
case $N in
 1) echo "Unit";;
 10) echo "Ten";;
 100) echo "Hundere";;
 1000) echo "Thousand";;
 10000) echo "Ten Thousands";;
 100000) echo "Lakh";;
 *) echo "Wrong value ";;
esac
```

step3>> Run the bash File

```
 ./CaseThree.sh
```

Q4.>Write a program that takes User Inputs and does Unit Conversion of different Length units

1. Feet to Inch 3. Inch to Feet
2. Feet to Meter 4. Meter to Feet

A.> step1>> Create a .sh file

```
   touch CaseFour.sh
```

step2>> Write logic in the bash file

```
 #!/bin/bash -x
read -p "Enter length : " L;
reg='^[0-9]$';
if  [[ $L =~ $reg  ]]
then
    FtToInch=`echo $L | awk '{FtToInch=$1*12} {print FtToInch}'`
    InchtoFt=`echo $L | awk '{InchToFeet=$1/12} {print InchToFeet}'`
    FtToMeter=`echo $L | awk '{FtToMeter=$1*0.3048} {print FtToMeter}'`
    MeterToFeet=`echo $L | awk '{MeterToFeet=$1*3.281} {print
MeterToFeet}'`
case $L in
$L)

    echo $L "feet = " $FtToInch "inch"
      echo $L "inch = " $InchtoFt "feet"
         echo $L "feet = " $FtToMeter "meter"
            echo $L "meter = " $MeterToFeet "feet" ;;
esac
else
    echo "wrongformat"
fi
```

step3>> Run the bash File

```
 ./CaseFour.sh
```

SELECTION PRACTICE PROBLEMS WITH IF, ELIF AND ELSE

Q1.> Read a single digit number and write the number in word

A.> Writing logic using if elif and else

```
 #!/bin/bash -x
read -p "Enter single digit number : " N;
if [ $N -eq 0 ]
 then
    echo "zero";
elif [ $N -eq 1 ]
  then
     echo "one";
elif [ $N -eq 2 ]
  then
```

```
     echo "Two";
elif [ $N -eq 3 ]
  then
     echo "Three";
elif [ $N -eq 4 ]
  then
     echo "Four";
elif [ $N -eq 5 ]
  then
     echo "Five";
elif [ $N -eq 6 ]
  then
     echo "Six";
elif [ $N -eq 7 ]
  then
     echo "seven";
elif [ $N -eq 8 ]
  then
     echo "eight";
elif [ $N -eq 9 ]
  then
     echo "nine";
else
     echo "Wrong Value";
fi
```

Q2.> Read a Number and Display the week day (Sunday, Monday,…)

A.> Writing logic using if elif and else

```
#!/bin/bash -x
read -p "Enter single digit number : " N;
if [ $N -eq 0 ]
 then
    echo "Sunday";
elif [ $N -eq 1 ]
  then
     echo "Monday";
elif [ $N -eq 2 ]
  then
     echo "Tuesday";
elif [ $N -eq 3 ]
  then
     echo "Wednesday";
elif [ $N -eq 4 ]
  then
     echo "Thursday";
elif [ $N -eq 5 ]
  then
     echo "Friday";
elif [ $N -eq 6 ]
  then
     echo "Saturday";
else
     echo "Wrong Value";
fi
```

Q3.> Read a Number 1, 10, 100, 1000, etc and display unit, ten, hundred,…

A.> Writing logic using if elif and else

```
#!/bin/bash -x
```

```
read -p "Enter value : " V;
if [ $V -eq 1 ]
 then
    echo "Unit";
elif [ $V -eq 10 ]
  then
     echo "Ten";
elif [ $V -eq 100 ]
  then
     echo "Hundereds";
elif [ $V -eq 1000 ]
  then
     echo "Thousands";
else
    echo "plz enter correct value"
fi
```

Q4.> Enter 3 Numbers do following arithmetic operation and find the one that
is maximum and minimum
1. a + b * c 3. c + a / b
2. a % b + c 4. a * b + c

A.> writing logic for printing max and min value using if elif and else

```
#!/bin/bash -x
read -p "Enter First number" a;
read -p "Enter Second number" b
read -p "Enter Third number" c;
A1=$(( a+b*c ));
A2=$(( a%b+c ));
A3=$(( c+a/b ));
A4=$(( a*b+c ));
if (( ($A1>$A2) && ($A1>$A3) && ($A1>$A4) ))
 then
   echo "Maximum value is : " $A1;
 elif (( ($A2>$A1) && ($A2>$A3) && ($A2>$A4) ))
 then
   echo "Maximum value is : " $A2;
 elif (( ($A3>$A1) && ($A3>$A2) && ($A3>$A4) ))
  then
     echo "Maximum value is : " $A3;
 else
      echo "Maximum value is : " $A4;
fi
if (( ($A1<$A2) && ($A1<$A3) && ($A1<$A4) ))
 then
   echo "Minimum value is : " $A1;
 elif (( ($A2<$A1) && ($A2<$A3) && ($A2<$A4) ))
 then
   echo "Minimum value is : " $A2;
 elif (( ($A3<$A1) && ($A3<$A2) && ($A3<$A4) ))
  then
     echo "Minimum value is : " $A3;
 else
      echo "Minimum value is : " $A4;
fi
```