Sequence Practice Problems

1) Use Random Function ((RANDOM)) to get Single Digit.

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

2) Use Random to get Dice Number between 1 to 6.

```
#!/bin/bash -x
diceNumber=$((RANDOM%6+1));
echo $diceNumber;
```

3) Add two Random Dice Number and Print the Result.

```
#!/bin/bash -x
firstDiceNumber=$((RANDOM%6+1));
secondDiceNumber=$((RANDOM%6+1));
addDiceNumber=$(( $firstDiceNumber + $secondDiceNumber ));
echo $addDiceNumber;
```

4) Write a program that reads 5 Random 2 Digit values, then finds their sum and the average.

```
#!/bin/bash -x
sum=0;
for((i=0;i<5;i++));
do
  random=$((RANDOM%90+10));
  sum=$(( $sum+$random ));
done
echo $sum;
avrg=$(( $sum/5 ));
echo $avrg;
```

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

```
#!/bin/bash -x
inch=1;
oneFeet=$(($inch * 12));
toFeets=`echo $inch | awk '{div = $inch*42/12; printf "%f", div}'`
squareFeet=`echo $oneFeet | awk '{div = 60*40; printf "%f", div}'`
squareMeter=`echo $squareFeet | awk '{div = $squareFeet*0.0929; printf "%f", div}'`
rectangularPlotAreaInMeter=$squareMeter;
rectangularPlotInAcres=`echo $rectangularPlotAreaInMeter | awk '{div =
(($rectangularPlotAreaInMeter*25))*0.000247; printf "%f", div}'`
```

Selection Practice Problems with if & else

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

```
#!/bin/bash -x
for (( count=0;count<5;count++))
do
  random=$((RANDOM%900 + 100));
  array[$count]="$random";
done
echo ${array[@]}
arrayLength=${#array[@]}
for (( i=0;i<$arrayLength;i++ ))
do
  for (( j=i+1;j<$arrayLength;j++ ))
  do
    if [ ${array[i]} -gt ${array[j]} ];
    then
      temp=${array[i]};
      array[$i]=${array[j]};
      array[$j]=$temp;
    fi
  done
done
echo "Minimum Number" ${array[0]};
echo "Maximum Number" ${array[$(($arrayLength-1))]};
```

2) Write a program that takes day and month from the command line and prints true if day of the month is between March 20 and June 20, false otherwise.

```
#!/bin/bash -x
read -p "Enter a Day:" day;
read -p "Enter a Month:" month;

if [[ 20 -le $day && $day -le 31 &&  3 -eq $month ]]
then
  echo "True";
elif [[ $day -le 31 && 4 -le $month && $month -le 5 ]]
then
  echo "True";
elif [[ $day -le 20 && $month -eq 6 ]];
then
  echo "True";
else
  echo "False";
fi
```

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

```
#!/bin/bash -x
read -p "Enter Year:" year;
if [ $(($year%4)) -eq 0 ];
then
  if [ $(($year%100)) -eq 0 ];
  then
    if [ $(($year%400)) -eq 0 ];
    then
      echo "leap year";
    else
      echo "Not leap year";
    fi
  else
    echo "leap year";
  fi
else
  echo "Not leap year"
fi
```

4) Write a program to simulate a coin flip and print out “Heads” or “Tails” accordingly.

```
#!/bin/bash -x
isHead=1;
headTailCheck=$((RANDOM%2));
if [ $isHead -eq $headTailCheck ]
then
    echo "Heads"
else
    echo "Tails"
Fi
```

Selection Practice Problems With if, elif & else

1) Read a Single digit number and write the number in word.

```
#!/bin/bash -x
read  -p "Enter Single Digit Number:" number;
if [ $number -eq 0 ];
then
  echo "Zero";
elif [ $number -eq 1 ];
then
  echo "One";
elif [ $number -eq 2 ];
then
  echo "Two";
elif [ $number -eq 3 ];
then
  echo "Three";
elif [ $number -eq 4 ];
then
  echo "Four";
elif [ $number -eq 5 ];
then
  echo "Five";
elif [ $number -eq 6 ];
then
  echo "Six";
elif [ $number -eq 7 ];
then
  echo "Seven";
elif [ $number -eq 8 ];
```

```
then
  echo "Eight"
elif [ $number -eq 9 ];
then
  echo "Nine";
fi
```

2) Read a Number and Display the weekday (Sunday, Monday,...).

```
#!/bin/bash -x
read -p "Enter a Single Digit Number between 0 to 6:" number;
if [ $number -eq 0 ];
then
  echo "Sunday";
elif [ $number -eq 1 ];
then
  echo "Monday";
elif [ $number -eq 2 ];
then
  echo "Tuesday";
elif [ $number -eq 3 ];
then
  echo "Wensday";
elif [ $number -eq 4 ];
then
  echo "Thursday";
elif [ $number -eq 5 ];
then
  echo "Friday";
elif [ $number -eq 6 ];
then
  echo "Saturday";
fi
```

3) Read a Number 1, 10, 100, 1000, etc and display unit, ten, hundred,...

```
#!/bin/bash -x
read -p "Enter Number 1 and multiple of 10:" number;
if [ $number -eq 1 ];
then
  echo "One";
elif [ $number -eq 10 ];
then
  echo "Ten";
elif [ $number -eq 100 ];
then
  echo "Hundred";
elif [ $number -eq 1000 ];
then
  echo "Thousand";
elif [ $number -gt 1000 ];
then
  echo "Invalid number";
fi
```

4) Enter 3 Number do Following arithmetic operation and find the one that is maximum and minimum.
   1) a + b * c
   2) a % b + c
   3) c + a / b
   4) a * b + c

```
#!/bin/bash -x

echo "Enter Three-Number"
read firstNumber;
read secondNumber;
read thirdNumber;

operationFirst=$(($firstNumber+$secondNumber*$thirdNumber));
operationSecond=$(($firstNumber%$secondNumber+$thirdNumber));
operationThird=$(($thirdNumber+$firstNumber/$secondNumber));
operationFourth=$(($firstNumber*$secondNumber+$thirdNumber));

result[0]="$operationFirst"
result[1]="$operationSecond"
result[2]="$operationThird"
result[3]="$operationFourth"
```

```
echo ${result[@]}
arrayLength=${#result[@]}
for (( i=0;i<$arrayLength;i++ ))
do
  for (( j=i+1;j<$arrayLength;j++ ))
  do
    if [ ${result[i]} -gt ${result[j]} ];
    then
      temp=${result[i]};
      result[$i]=${result[j]};
      result[$j]=$temp;
    fi
  done
done
echo "Minimum Number" ${result[0]};
echo "Maximum Number" ${result[$(($arrayLength-1))]};
```

Selection Practice Problem with case Statement

1) Read a Single digit number and write the number in word using Case.

```
#!/bin/bash -x
read  -p "Enter Single Digit Number:" number;
case $number 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 "Please enter single Number"
    ;;
esac
```

2) Read a Number and Display the weekday (Sunday, Monday,...).

```
#!/bin/bash -x
read -p "Enter a Single Digit Number:" number;
case $number in
  0)
    echo "Sunday"
    ;;
  1)
    echo "Monday"
    ;;
  2)
    echo "Tuesday"
    ;;
  3)
    echo "Wensday"
    ;;
  4)
    echo "Thursday"
    ;;
  5)
    echo "Friday"
    ;;
  6)
    echo "Saturday"
    ;;
  *)
```

```
    echo "Please Enter number between 0 to 6"
    ;;
esac
```

3) Read a Number 1, 10, 100, 1000 etc and display unit, ten, hundred,...

```
#!/bin/bash -x
read -p "Enter number 1 and multiple of 10:" number;

case $number in
  1)
    echo "One"
    ;;
  10)
    echo "Ten"
    ;;
  100)
    echo "Hundred"
    ;;
  1000)
    echo "Thousand"
    ;;
  *)
    echo "Invalid number"
    ;;
esac
```

4) 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

```
#!/bin/bash -x
echo "1) Feet to Inch";
echo "2) Feet to Meter";
echo "3) Inch to Feet";
echo "4) Meter to Feet";
read -p "Enter a Choice:" choice;
case $choice in
  1)
    read -p "Enter Feet:" feet
    inch=`echo $feet | awk '{div = $feet*12; printf "%f", div}'`
    echo "Inches "$inch
```

```
    ;;
  2)
    read -p "Enter Feet:" feet
    meter=`echo $feet | awk '{div = $feet/3.28; printf "%f", div}'`
    echo "Feets "$meter
    ;;
  3)
    read -p "Enter Inch:" inch
    feet=`echo $inch | awk '{div = $inch/12; printf "%f", div}'`
    echo "Feets "$feet
    ;;
  4)
    read -p "Enter Meter:" meter
    feet=`echo $meter | awk '{div = $meter*3.28; printf "%f", div}'`
    echo "Feets "$feet
    ;;
  *)
    echo "Invald Input"
    ;;
esac
```