**1] Use Random Function (( RANDOM )) to get Single Digit**

**Solution-**

echo $((RANDOM%10))

**2] Use Random to get Dice Number between 1 to 6**

**Solution-**

echo $((RANDOM%6+1))

**3] Add two Random Dice Number and Print the Result.**

**Solution-**

#!/bin/bash -x

diceOne=$((RANDOM%6+1))

diceTwo=$((RANDOM%6+1))

sum=$(($diceOne + $diceTwo))

echo $sum

**Output-**

+ diceOne=2

+ diceTwo=2

+ sum=4

+ echo 4

4

**4] Write a program that reads 5 Random 2 Digit values , then find their sum and the average**

**Solution-**

#!/bin/bash -x

sum=0;

avg=0;

for((i=0;i<5;i++))

do

num=$((10 + RANDOM%99))

sum=$((sum+num))

done

avg=$((sum/5))

echo $avg

**Output-**

+ sum=0

+ avg=0

+ (( i=0 ))

+ (( i<5 ))

+ num=81

+ sum=81

+ (( i++ ))

+ (( i<5 ))

+ num=52

+ sum=133

+ (( i++ ))

+ (( i<5 ))

+ num=13

+ sum=146

+ (( i++ ))

+ (( i<5 ))

+ num=85

+ sum=231

+ (( i++ ))

+ (( i<5 ))

+ num=63

+ sum=294

+ (( i++ ))

+ (( i<5 ))

+ avg=58

+ echo 58

58

**5. Unit Conversion**

**a] 1ft = 12 in then 42 in = ? ft**

**Solution-**

#!/bin/bash -x

ftin=12

inch=42

newft=$(( $inch / $ftin ))

echo $newft

**Output-**

+ ftin=12

+ inch=42

+ newft=3

+ echo 3

3

**b]Rectangular Plot of 60 feet x 40 feet in meters**

**Solution-**

#!/bin/bash -x

feet=3

rectPlot=$((60/$feet))"x"$((40/$feet))

echo $rectPlot "meters"

**Output-**

+ feet=3

+ rectPlot=20x13

+ echo 20x13 meters

20x13 meters

**c] Calculate area of 25 such plots in acres**

**Solution-**

#!/bin/bash -x

area=$((60\*40))

newPlot=$((25\*$area))

acres=$(($newPlot/43560))

echo "Area in acres: "$acres

**Output-**

+ area=2400

+ newPlot=60000

+ acres=1

+ echo 'Area in acres: 1'

Area in acres: 1

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

**Solution-**

#!/bin/bash -x

minNum=1000

maxNum=0

for ((i=0;i<5;i++))

do

random=$(( 100 + RANDOM%999 ))

if [[ $random -ge $maxNum ]]

then

maxNum=$random

fi

if [[ $random -le $minNum ]]

then

minNum=$random

fi

done

echo "Maximum number is" $maxNum

echo "Minimum number is" $minNum

**Output-**

+ minNum=1000

+ maxNum=0

+ (( i=0 ))

+ (( i<5 ))

+ random=255

+ [[ 255 -ge 0 ]]

+ maxNum=255

+ [[ 255 -le 1000 ]]

+ minNum=255

+ (( i++ ))

+ (( i<5 ))

+ random=174

+ [[ 174 -ge 255 ]]

+ [[ 174 -le 255 ]]

+ minNum=174

+ (( i++ ))

+ (( i<5 ))

+ random=594

+ [[ 594 -ge 255 ]]

+ maxNum=594

+ [[ 594 -le 174 ]]

+ (( i++ ))

+ (( i<5 ))

+ random=689

+ [[ 689 -ge 594 ]]

+ maxNum=689

+ [[ 689 -le 174 ]]

+ (( i++ ))

+ (( i<5 ))

+ random=335

+ [[ 335 -ge 689 ]]

+ [[ 335 -le 174 ]]

+ (( i++ ))

+ (( i<5 ))

+ echo 'Maximum number is' 689

Maximum number is 689

+ echo 'Minimum number is' 174

Minimum number is 174

**2] 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.**

**Solution-**

#!/bin/bash -x

dayCheck=0

monthCheck=0

read -p "Enter the day:" day

read -p "Enter the month" month

if [[ ($month -eq 3 && $day -ge 19 )|| $month -eq 4 || $month -eq 5 ||

( $month -eq 6 && $day -le 21 ) ]]

then

echo True

else

echo false

fi

**Output-**

+ dayCheck=0

+ monthCheck=0

+ read -p 'Enter the day:' day

Enter the day:24

+ read -p 'Enter the month' month

Enter the month3

+ [[ 3 -eq 3 ]]

+ [[ 24 -ge 19 ]]

+ echo True

True

**3] 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.**

**Solution-**

#!/bin/bash -x

read -p "Enter the year: " year

size=${#year}

echo $size

if [[ $size -eq 4 ]]

then

if [[ ( $year%4 -eq 0 && $year%100 -ne 0 ) || $year%400 -eq 0 ]]

then

echo Year $year is leap year

else

echo year $year not leap year

fi

else

echo Enter right year

fi

**Output-**

+ read -p 'Enter the year: ' year

Enter the year: 2000

+ size=4

+ echo 4

4

+ [[ 4 -eq 4 ]]

+ [[ 2000%4 -eq 0 ]]

+ [[ 2000%100 -ne 0 ]]

+ [[ 2000%400 -eq 0 ]]

+ echo Year 2000 is leap year

Year 2000 is leap year

**4] Write a program to simulate a coin flip and print out "Heads" or "Tails" accordingly.**

**Solution-**

#!/bin/bash -x

flip=$((RANDOM%2))

if [[ $flip -eq 0 ]]

then

echo Heads

else

echo Tails

fi

**Output-**

+ flip=1

+ [[ 1 -eq 0 ]]

+ echo Tails

Tails

**Selection Practice Problems with case statement**

**1] Read a single digit number and write the number in word using Case**

**Solution-**

#!/bin/bash -x

read -p "Enter the 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 Enter the correct number

;;

esac

**Output-**

+ read -p 'Enter the number' number

Enter the number5

+ [[ number -le 10 ]]

+ case $number in

+ echo Five

Five

**2] Read a Number and Display the week day (Sunday, Monday,...)**

**Solution-**

#!/bin/bash -x

read -p "Enter the number" number

case $number in

1)echo Monday

;;

2)echo Tuesday

;;

3)echo wednesday

;;

4)echo Thursday

;;

5)echo Friday

;;

6)echo saturday

;;

7)echo Sunday

;;

\*)echo Enter the correct number

;;

esac

**Output-**

+ read -p 'Enter the number' number

Enter the number4

+ case $number in

+ echo Thursday

Thursday

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

**Solution-**

#!/bin/bash -x

read -p "Enter the number: " number

size=${#number}

case $size in

1)echo Unit

;;

2)echo Ten

;;

3)echo Hundred

;;

4)echo Thousand

;;

esac

**Output-**

+ read -p 'Enter the number: ' number

Enter the number: 1000

+ size=4

+ case $size in

+ echo Thousand

Thousand

**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**

**Solution-**

#!/bin/bash -x

read -p "Enter the choice: " choice

case $choice in

1)echo "Feet to Inch"

read -p "Enter the number in feet:" feet

printf %.f "$(($feet\*12))"

;;

2)echo "Feet to Meter"

read -p "Enter the number in feet:" feet

printf %.4f "$((1000000000 \* ($feet\*3048)/10000))e-9"

;;

3)echo "inch to feet"

read -p "Enter the number in inch:" inch

printf %.4f "$((1000000000 \* ($inch\*1)/12))e-9"

;;

4)echo "Meter to Feet"

read -p "Enter the number in meter:" meter

printf %.4f "$((1000000000 \* ($meter\*10000)/3048))e-9"

;;

\*)echo "Enter the correct option"

;;

esac

**Output-**

+ read -p 'Enter the choice: ' choice

Enter the choice: 1

+ case $choice in

+ echo 'Feet to Inch'

Feet to Inch

+ read -p 'Enter the number in feet:' feet

Enter the number in feet:48

+ printf 576

576

**] 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**

**Solution-**

#!/bin/bash -x

max=0

min=10000

read -p "First number: " a

read -p "Second number: " b

read -p "Third number: " c

option1=$(($a+$b\*$c))

option2=$(($a%$b+$c))

option3=$(($c+$a\*$b))

option4=$(($a\*$b\*$c))

for((i=1;i<5;i++))

do

Array[((i))]=$(("option"$i))

done

for i in "${Array[@]}"

do

if [[ $i -ge $max ]]

then

max=$i

fi

if [[ $i -le $min ]]

then

min=$i

fi

done

echo "Greatest number is: "$max

echo "Samllest number is: "$min

**Output-**

+ max=0

+ min=10000

+ read -p 'First number: ' a

First number: 1

+ read -p 'Second number: ' b

Second number: 2

+ read -p 'Third number: ' c

Third number: 3

+ option1=7

+ option2=4

+ option3=5

+ option4=6

+ (( i=1 ))

+ (( i<5 ))

+ Array[((i))]=7

+ (( i++ ))

+ (( i<5 ))

+ Array[((i))]=4

+ (( i++ ))

+ (( i<5 ))

+ Array[((i))]=5

+ (( i++ ))

+ (( i<5 ))

+ Array[((i))]=6

+ (( i++ ))

+ (( i<5 ))

+ for i in "${Array[@]}"

+ [[ 7 -ge 0 ]]

+ max=7

+ [[ 7 -le 10000 ]]

+ min=7

+ for i in "${Array[@]}"

+ [[ 4 -ge 7 ]]

+ [[ 4 -le 7 ]]

+ min=4

+ for i in "${Array[@]}"

+ [[ 5 -ge 7 ]]

+ [[ 5 -le 4 ]]

+ for i in "${Array[@]}"

+ [[ 6 -ge 7 ]]

+ [[ 6 -le 4 ]]

+ echo 'Greatest number is: 7'

Greatest number is: 7

+ echo 'Samllest number is: 4'

Samllest number is: 4

**1] Read a single digit number and write the number in word**

**Solution-**

#!/bin/bash -x

read -p "Enter the 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

else

echo Wrong input

fi

**OUtput-**

+ read -p 'Enter the number' number

Enter the number5

+ [[ 5 -eq 0 ]]

+ [[ 5 -eq 1 ]]

+ [[ 5 -eq 2 ]]

+ [[ 5 -eq 3 ]]

+ [[ 5 -eq 4 ]]

+ [[ 5 -eq 5 ]]

+ echo Five

Five

**2] Read a Number and Display the week day (Sunday, Monday,...)**

**Solution-**

#!/bin/bash -x

read -p "Enter the number" number

if [[ $number -eq 1 ]]

then

echo MOnday

elif [[ $number -eq 2 ]]

then

echo Tuesday

elif [[ $number -eq 3 ]]

then

echo Wednesday

elif [[ $number -eq 4 ]]

then

echo Thursday

elif [[ $number -eq 5 ]]

then

echo Friday

elif [[ $number -eq 6 ]]

then

echo Saturday

elif [[ $number -eq 5 ]]

then

echo Sunday

else

echo Wrong input

fi

**Output-**

+ read -p 'Enter the number' number

Enter the number3

+ [[ 3 -eq 1 ]]

+ [[ 3 -eq 2 ]]

+ [[ 3 -eq 3 ]]

+ echo Wednesday

Wednesday

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

**Solution-**

#!/bin/bash -x

read -p "Enter the number" number

if [[ $number -eq 1 ]]

then

echo Unit

elif [[ $number -eq 10 ]]

then

echo Ten

elif [[ $number -eq 100 ]]

then

echo Hundred

elif [[ $number -eq 1000 ]]

then

echo Thousand

else

echo Wrong input

fi

**Output-**

+ read -p 'Enter the number' number

Enter the number100

+ [[ 100 -eq 1 ]]

+ [[ 100 -eq 10 ]]

+ [[ 100 -eq 100 ]]

+ echo Hundred

Hundred