SEQUENCE PRACTICE PROBLEMS

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

Ans.) >nano random.sh

#!/bin/bash -x

random=$(( RANDOM%10 ))

echo $random

* ./random.sh
* + random=7
* + echo 7
* 7

You’ll get single digit random numbers.

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1. **Use Random to get Dice Number between 1 to 6**.

Ans.) > nano dice.sh

#!/bin/bash –x

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

echo $random

* ./dice.sh
* + random=6
* + echo 6
* 6

You ll get Random dice number between 1 to 6.

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1. **Add two Random Dice Number and Print the Result.**

Ans.) > nano addDice.sh

#!/bin/bash –x

diceNo1=$(( RANDOM%6+1 ))

diceNo2=$(( RANDOM%6+1 ))

sum=$(( diceNo1 + diceNo2 ))

echo “Sum of $diceNo1 and $diceNo2 is” $sum

* **./addDice.sh**

+ diceNo1=5

+ diceNo2=2

+ sum=7

+ echo 'Sum of 5 and 2 is' 7

Sum of 5 and 2 is 7

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

Ans.) > nano random2.sh

* #! /bin/bash
* echo "5 random variables are : "
* ulimit=99
* llimit=10
* mods=$((ulimit-llimit+1))
* num1=$((llimit+RANDOM%mods))
* num2=$((llimit+RANDOM%mods))
* num3=$((llimit+RANDOM%mods))
* num4=$((llimit+RANDOM%mods))
* num5=$((llimit+RANDOM%mods))
* echo $num1 $num2 $num3 $num4 $num5
* sum=$((num1+num2+num3+num4+num5))
* avg=$((sum/5))
* echo "Sum is : " $sum
* echo "Average is : " $avg

+ echo '5 random variables are : '

5 random variables are :

+ ulimit=99

+ llimit=10

+ mods=90

+ num1=66

+ num2=36

+ num3=84

+ num4=88

+ num5=59

+ echo 66 36 84 88 59

66 36 84 88 59

+ sum=333

+ avg=66

+ echo 'Sum is : ' 333

Sum is : 333

+ echo 'Average is : ' 66

Average is : 66

1. **Unit Conversion**
2. **1ft=12 inch then 42 inch = ? ft.**
3. **Rectangular Plot of 60ft X 40 ft in meters.**
4. **Calculate area of 25 such plots in acres.**

Ans.)

>nano unit.sh

#!/bin/bash

echo "Converting Inch to foot"

inchToFoot= awk 'BEGIN{ print 42/12}'

echo $inchToFoot

echo "Converting feet to meter"

lengthToMeter= awk 'BEGIN{print 60/3.2808}'

widthToMeter= awk 'BEGIN{print 40/3.2808}'

res=echo $lengthToMeter $widthToMeter | awk '{print $1 \* $2}'

echo $res

SELECTION PRACTICE PROBLEMS WITH IF AND ELSE

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

Ans.) > nano random3.sh

#!/bin/bash -x

ulim=999

llim=100

num1=$(( llim+RANDOM%(1+ulim-llim) ))

num2=$(( llim+RANDOM%(1+ulim-llim) ))

num3=$(( llim+RANDOM%(1+ulim-llim) ))

num4=$(( llim+RANDOM%(1+ulim-llim) ))

num5=$(( llim+RANDOM%(1+ulim-llim) ))

echo "Number 1 is" $num1

echo "Number 2 is" $num2

echo "Number 3 is" $num3

echo "Number 4 is" $num4

echo "Number 5 is" $num5

if [ $num1 -gt $num2 ] && [ $num1 -gt $num3 ] && [ $num1 -gt $num4 ] && [ $num1 -gt $num5 ]

then

echo "$num1 is the maximum value"

elif [ $num2 -gt $num3 ] && [ $num2 -gt $num4 ] && [ $num2 -gt $num5 ]

then

echo "$num2 is the maximum value"

elif [ $num3 -gt $num4 ] && [ $num3 -gt $num5 ]

then

echo "$num3 is the maximum value"

elif [ $num4 -gt $num5 ]

then

echo "$num4 is the maximum value"

else

echo "$num5 is the maximum value"

fi

if [ $num1 -lt $num2 ] && [ $num1 -lt $num3 ] && [ $num1 -lt $num4 ] && [ $num1 -lt $num5 ]

then

echo "$num1 is the minimum value"

elif [ $num2 -lt $num3 ] && [ $num2 -lt $num4 ] && [ $num2 -lt $num5 ]

then

echo "$num2 is the minimum value"

elif [ $num3 -lt $num4 ] && [ $num3 -lt $num5 ]

then

echo "$num3 is the minimum value"

elif [ $num4 -lt $num5 ]

then

echo "$num4 is the minimum value"

else

echo "$num5 is the minimum value"

fi

**>$ ./random3.sh**

+ ulim=999

+ llim=100

+ num1=113

+ num2=842

+ num3=603

+ num4=537

+ num5=960

+ echo 'Number 1 is' 113

Number 1 is 113

+ echo 'Number 2 is' 842

Number 2 is 842

+ echo 'Number 3 is' 603

Number 3 is 603

+ echo 'Number 4 is' 537

Number 4 is 537

+ echo 'Number 5 is' 960

Number 5 is 960

+ '[' 113 -gt 842 ']'

+ '[' 842 -gt 603 ']'

+ '[' 842 -gt 537 ']'

+ '[' 842 -gt 960 ']'

+ '[' 603 -gt 537 ']'

+ '[' 603 -gt 960 ']'

+ '[' 537 -gt 960 ']'

**+ echo '960 is the maximum value'**

**960 is the maximum value**

+ '[' 113 -lt 842 ']'

+ '[' 113 -lt 603 ']'

+ '[' 113 -lt 537 ']'

+ '[' 113 -lt 960 ']'

**+ echo '113 is the minimum value'**

**113 is the minimum value**

1. **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.**

Ans. ) -> nano -T 3 dayOfMonth.sh

#!/bin/bash -x

read -p "Enter the day:" day

read -p "Enter the month:" month

echo $day

echo $month

if [[ $month -eq 3 && $day -ge 20 && $day -le 31 ]] ||

[[ $month -eq 4 && $day -ge 1 && $day -le 30 ]] ||

[[ $month -eq 5 && $day -ge 1 && $day -le 31 ]] ||

[[ $month -eq 6 && $day -ge 1 && $day -le 20 ]]

then

echo "True"

else

echo "False"

fi

**O/P**

**./dayOfMonth.sh**

+ read -p 'Enter the day:' day

Enter the day:20

+ read -p 'Enter the month:' month

Enter the month:3

+ echo 20

20

+ echo 3

3

+ [[ 3 -eq 3 ]]

+ [[ 20 -ge 20 ]]

+ [[ 20 -le 31 ]]

+ echo True

True

**./dayOfMonth.sh**

+ read -p 'Enter the day:' day

Enter the day:19

+ read -p 'Enter the month:' month

Enter the month:2

+ echo 19

19

+ echo 2

2

+ [[ 2 -eq 3 ]]

+ [[ 2 -eq 4 ]]

+ [[ 2 -eq 5 ]]

+ [[ 2 -eq 6 ]]

+ echo False

False

1. **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.**

Ans.) -> nano leapYear.sh

>#!/bin/bash -x

read -p "Enter a Year" year

by\_fourHundred=$(($year%400))

by\_four=$(($year%4))

by\_hundred=$(($year%100))

if [ $by\_four -eq 0 ] && [ $by\_hundred -ne 0 ] || [ $by\_fourHundred -eq 0 ]

then

echo "$year is a Leap Year"

else

echo "$year is not a Leap Year"

fi

**O/P**

**./leapYear.sh**

+ read -p 'Enter a Year' year

Enter a Year2020

+ by\_fourHundred=20

+ by\_four=0

+ by\_hundred=20

+ '[' 0 -eq 0 ']'

+ '[' 20 -ne 0 ']'

+ echo '2020 is a Leap Year'

2020 is a Leap Year

**./leapYear.sh**

+ read -p 'Enter a Year' year

Enter a Year2022

+ by\_fourHundred=22

+ by\_four=2

+ by\_hundred=22

+ '[' 2 -eq 0 ']'

+ '[' 22 -eq 0 ']'

+ echo '2022 is not a Leap Year'

2022 is not a Leap Year

**./leapYear.sh**

+ read -p 'Enter a Year' year

Enter a Year2100

+ by\_fourHundred=100

+ by\_four=0

+ by\_hundred=0

+ '[' 0 -eq 0 ']'

+ '[' 0 -ne 0 ']'

+ '[' 100 -eq 0 ']'

+ echo '2100 is not a Leap Year'

2100 is not a Leap Year

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

Ans.) > **nano coinFlip.sh**

#!/bin/bash -x

isHeads=1

isTails=2

coinFlip=$(( RANDOM%2+1 ))

if [ $isHeads -eq $coinFlip ]

then

echo "Heads"

else

echo "Tails"

fi

**O/P**

**./coinFlip.sh**

+ isHeads=1

+ isTails=2

+ coinFlip=1

+ '[' 1 -eq 1 ']'

+ echo Heads

Heads

**$ ./coinFlip.sh**

$ ./coinFlip.sh

+ isHeads=1

+ isTails=2

+ coinFlip=2

+ '[' 1 -eq 2 ']'

+ echo Tails

Tails

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SELECTION PRACTICE PROBLEMS WITH IF,ELIF AND ELSE

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

Ans.) > nano test.sh

#!/bin/bash -x

read -p "Enter a single digit number" num

if [ $num == 1 ]

then

echo One

elif [ $num == 2 ]

then

echo Two

elif [ $num == 3 ]

then

echo Three

elif [ $num == 4 ]

then

echo Four

elif [ $num == 5 ]

then

echo Five

elif [ $num == 6 ]

then

echo Six

elif [ $num == 7 ]

then

echo Seven

elif [ $num == 8 ]

then

echo Eight

elif [ $num == 9 ]

then

echo Nine

else

echo "INVALID"

fi

* ./test.sh
* + read -p 'Enter a single digit number' num
* Enter a single digit number7
* + '[' 7 == 1 ']'
* + '[' 7 == 2 ']'
* + '[' 7 == 3 ']'
* + '[' 7 == 4 ']'
* + '[' 7 == 5 ']'
* + '[' 7 == 6 ']'
* + '[' 7 == 7 ']'
* + echo Seven
* Seven

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1. **Read a Number and Display the weekday (Sunday,Monday,…)**

Ans.) > nano weekday.sh

#!/bin/bash -x

read -p "Enter a number between 0-6 to check day" day

if [ $day == 0 ]

then

echo Sunday

elif [ $day == 1 ]

then

echo Monday

elif [ $day == 2 ]

then

echo Tuesday

elif [ $day == 3 ]

then

echo Wednesday

elif [ $day == 4 ]

then

echo Thursday

elif [ $day == 5 ]

then

echo Friday

elif [ $day == 6 ]

then

echo Saturday

else

echo Invalid Number

fi

>./weekday.sh

+ read -p 'Enter a number between 0-6 to check day' day

Enter a number between 0-6 to check day4

+ '[' 4 == 0 ']'

+ '[' 4 == 1 ']'

+ '[' 4 == 2 ']'

+ '[' 4 == 3 ']'

+ '[' 4 == 4 ']'

+ echo Thursday

Thursday

>

./weekday.sh

+ read -p 'Enter a number between 0-6 to check day' day

Enter a number between 0-6 to check day8

+ '[' 8 == 0 ']'

+ '[' 8 == 1 ']'

+ '[' 8 == 2 ']'

+ '[' 8 == 3 ']'

+ '[' 8 == 4 ']'

+ '[' 8 == 5 ']'

+ '[' 8 == 6 ']'

+ echo Invalid Number

Invalid Number

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

Ans.) > nano placevalue1.sh

>#!/bin/bash -x

read -p "Enter a number to check its place value" num

if [ $num -eq 1 ]

then

echo "Unit"

elif [ $num -eq 10 ]

then

echo "Tens"

elif [ $num -eq 100 ]

then

echo "Hundred"

elif [ $num -eq 1000 ]

then

echo "Thousand"

elif [ $num -eq 10000 ]

then

echo "Ten Thousands"

elif [ $num -eq 100000 ]

then

echo "Lakhs"

else

echo "Invalid number"

fi

**O/P**

**./placevalue1.sh**

+ read -p 'Enter a number to check its place value' num

Enter a number to check its place value100

+ '[' 100 -eq 1 ']'

+ '[' 100 -eq 10 ']'

+ '[' 100 -eq 100 ']'

+ echo Hundred

Hundred

**./placevalue1.sh**

+ read -p 'Enter a number to check its place value' num

Enter a number to check its place value1000000

+ '[' 1000000 -eq 1 ']'

+ '[' 1000000 -eq 10 ']'

+ '[' 1000000 -eq 100 ']'

+ '[' 1000000 -eq 1000 ']'

+ '[' 1000000 -eq 10000 ']'

+ '[' 1000000 -eq 100000 ']'

+ echo 'Invalid number'

Invalid number

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

**Ans. ) > nano arithmetic.sh**

**>** #!/bin/bash -x

read -p "Enter First Number" a

read -p "Enter Second Number" b

read -p "Enter Third Number" c

res1=$(( a+b\*c ))

res2=$(( a%b+c ))

res3=$(( c+a/b ))

res4=$(( a\*b+c ))

echo $res1

echo $res2

echo $res3

echo $res4

if [ $res1 -gt $res2 ] && [ $res1 -gt $res3 ] && [ $res1 -gt $res4 ]

then

echo "$res1 is maximum"

elif [ $res2 -gt $res3 ] && [ $res2 -gt $res4 ]

then

echo "$res2 is maximum"

elif [ $res3 -gt $res4 ]

then

echo "$res3 is maximum"

else

echo "$res4 is maximum"

fi

if [ $res1 -lt $res2 ] && [ $res1 -lt $res3 ] && [ $res1 -lt $res4 ]

then

echo "$res1 is minimum"

elif [ $res2 -lt $res3 ] && [ $res2 -lt $res4 ]

then

echo "$res2 is minimum"

elif [ $res3 -lt $res4 ]

then

echo "$res3 is minimum"

else

echo "$res4 is minimum"

fi

* ./arithmetic.sh

+ read -p 'Enter First Number' a

Enter First Number3

+ read -p 'Enter Second Number' b

Enter Second Number5

+ read -p 'Enter Third Number' c

Enter Third Number8

+ res1=43

+ res2=11

+ res3=8

+ res4=23

+ echo 43

43

+ echo 11

11

+ echo 8

8

+ echo 23

23

+ '[' 43 -gt 11 ']'

+ '[' 43 -gt 8 ']'

+ '[' 43 -gt 23 ']'

+ echo ‘43 is maximum'

43 is maximum

+ '[' 43 -lt 11 ']'

+ '[' 11 -lt 8 ']'

+ '[' 8 -lt 23 ']'

+ echo '8 is minimum'

8 is minimum

SELECTION PRACTICE PROBLEMS WITH CASE STATEMENT

1. **Read a single digit number and write the number in word using case.**

Ans.) > nano numWord.sh

> #!/bin/bash -x

read -p "Enter a single digit number" num

case $num in

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 Invalid

esac

> ./numWord.sh

+ read -p 'Enter a single digit number' num

Enter a single digit number7

+ case $num in

+ echo Seven

Seven

> ./numWord.sh

+ read -p 'Enter a single digit number' num

Enter a single digit number16

+ case $num in

+ echo Invalid

Invalid

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1. **Read a Number and Display the weekday (Sunday,Monday,…)**

**Ans.)** > nano weekday.sh

> #!/bin/bash -x

read -p "Enter number between 0-6 to check Weekday" day

case $day in

0)

echo Sunday ;;

1)

echo Monday ;;

2)

echo Tuesday ;;

3)

echo Wednesday ;;

4)

echo Thursday ;;

5)

echo Friday ;;

6)

echo Saturday ;;

\*)

echo Invalid

esac

* ./weekday.sh
* + read -p 'Enter number between 0-6 to check Weekday' day
* Enter number between 0-6 to check Weekday3
* + case $day in
* + echo Wednesday
* Wednesday
* ./weekday.sh
* + read -p 'Enter number between 0-6 to check Weekday' day
* Enter number between 0-6 to check Weekday9
* + case $day in
* + echo Invalid
* Invalid

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

Ans.) > nano placeValue.sh

#!/bin/bash -x

read -p "Enter a number" num

case $num in

1)

echo "Unit"

;;

10)

echo "Tens"

;;

100)

echo "Hundreds"

;;

1000)

echo "Thousands"

;;

10000)

echo "Ten Thousands"

;;

100000)

echo "Lakhs"

;;

\*)

echo "Invalid"

;;

esac

O/P

**./placeValue.sh**

+ read -p 'Enter a number' num

Enter a number 1

+ case $num in

+ echo Unit

Unit

**./placeValue.sh**

+ read -p 'Enter a number' num

Enter a number 10000

+ case $num in

+ echo 'Ten Thousands'

Ten Thousands

**./placeValue.sh**

+ read -p 'Enter a number' num

Enter a number 10000000

+ case $num in

+ echo Invalid

Invalid

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

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

* nano unitConversion.sh

#!/bin/bash -x

read -p "Enter feet value to convert to inch :" feetInp

inch=$((12\*$feetInp))

echo "Feet to Meter conversion result :"

meter=$(($feetInp/3))

read -p "Enter inch value to convert to feet" inchInp

feet=$(($inchInp/12))

read -p "Enter meter value to convert to feet" meterInp

feet=$(($meterInp\*3))

**O/P**

$ ./unitConversion.sh

+ read -p 'Enter feet value to convert to inch :' feetInp

Enter feet value to convert to inch :8

+ inch=96

+ echo 'Feet to Meter conversion result :'

Feet to Meter conversion result :

+ meter=2

+ read -p 'Enter inch value to convert to feet' inchInp

Enter inch value to convert to feet600

+ feet=50

+ read -p 'Enter meter value to convert to feet' meterInp

Enter meter value to convert to feet40

+ feet=120