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PART - A

1) Program to find out leap year & program to find given number is odd or even.

```
echo program for leap year and even and odd
echo enter the year
read year
if [ `expr $year % 4` -eq 0 ]
then
    echo leap year
else
    echo not a leap year
fi

echo enter a number
read num
if [ `expr $num % 2` -eq 0 ]
then
    echo the number is even
else
    echo the number is odd.
```

Output:

program for leap year and even and o

enter the year

2000

leap year

enter a number

2

the number is even

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2) program to find largest of 3 numbers.

```
echo enter 3 numbers
read a
read b
read c
if [ $a -gt $b ]
then
    if [ $a -gt $c ]
    then
        echo a is greater
    else
        echo c is greater
    fi
elif [ $b -gt $c ]
then
    echo b is greater
else
    echo c is greater
fi
```

Output:

enter 3 numbers

34

22

89

c is greater

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3) Program to find the multiplication table using while loop and program to print the first n natural numbers.

```
echo the program for multiplication table using while
echo read a number
read n
echo enter the value of i
read i
while [ $i -le 10 ]
do
    echo $n * $i is : `expr $n * $i`
    i=`expr $i + 1`
done

echo read the value of n
read n
echo enter the value of i
read i
while [ $i -le $n ]
do
    echo the value of i is $i
    i=`expr $i + 1`
done
```

Output:

The program for multiplication table using while

read a number
3
enter the value of i
5

3*5 is : 15
3*6 is : 18
3*7 is : 21
3*8 is : 24
3*9 is : 27
3*10 is : 30

read the value of n
4
enter the value of i
2
the value of i is 2
the value of i is 3
the value of i is 4

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4) Program to find the LCM and GCD of a number

```
echo enter the two numbers m and n
read m
read n
temp = 'expr $m \* $n'
echo the value of temp is $temp
while [ $m -ne $n ]
do
    if [ $m -gt $n ]
    then
        m='expr $m - $n'
    else
        n='expr $n - $m'
    fi
done
gcd = $n
lcm = 'expr $temp / $ged'
echo lcm = $lcm
echo gcd = $ged
```

Output:

```
enter the two numbers m and n
2
4
the value of temp is 8
lcm = 4
gcd = 2
```

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5) Program to show the use of break and continue

```
echo enter a number
read number
while [ $number -lt 10 ]
do
        echo value of number is $number
        if [ $number -eq 5 ]
        then
                break
        fi
        a='expr $number + 1'
done

echo enter a number
read number
while [ $number -lt 10 ]
do
        echo value of number is $number
        if [ $number -eq 5 ]
        then
                continue
        fi
        a='expr $number + 1'
done
```

Output:

enter a number

5

value of the number is 5

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6) Program to count the string in a reverse order

```
echo enter the string and print it in the reverse order
read str
len='echo $str | wc -c'
len='expr $len -1'
echo length of the string $len
echo original string is $str
echo length of string is: $len
echo reversed string is:
while [ $len -ge 1 ]
do
    rev='echo $str | cut -c $len'
    echo $rev
    len='expr $len -1'
done
```

Output:

enter the string and print it in the reverse order
Zaiba
length of the string 5

original string is Zaiba
length of string is : 5
reversed string is :
a
b
i
a
Z

1) program to find a calculate the electricity bill

```
echo enter the units consumed
read units
if [ $units -gt 10 -a $units -lt 15 ]
then
    echo units should be more
elif [ $units -gt 20 ]
then
    net='expr $units \* 2 + 25'
    echo the value of units is $net
elif [ $units -gt 40 ]
then
    net1='expr $units \* 3 + 25'
    echo the value of units is $net1
else
    echo units are crossed
fi
```

Output:

enter the units consumed
10
units should be more

3) program to check the given string is palindrome or not

```
echo enter a string
read str
size=`echo $str | wc -c`
len=`expr $size - 1`
k=`expr $len / 2`
i=1
while [ $i -le $k ]
do
    first=`echo $str | cut -c $i`
    ch=`expr $len - $i + 1`
    last=`echo $str | cut -c $ch`
    if [ $first != $last ]
    then
    echo $str is not a palindrome
    exit
    fi
i=`expr $i + 1`
done
echo $str is a palindrome
```

output:

enter a string
Zaiba

Zaiba is not a palindrome

```
while [ $i -lt $m]
do
    if ['expr $m % $i' -eq 0]
    then
        flag=0
        break
    else
        i='expr $i + 1'
    fi
done
    if [ $flag -eq 1]
    then
        echo $m
    fi
    m='expr $m + 1'
done
```

Output:

2 20

2
3
5
7
11
13
17
19

```
echo how many numbers
read n
f3='expr $f1 + $f2'
i=3
echo $f1
echo $f2
while [ $i -le $n]
do
    echo $f2
    f1 = $f2
    f2 = $f3
    f3 = 'expr $f1 + $f2'
    i = 'expr $i +1'
done
```

Output:

```
how many numbers
5

0
1
1
2
3
```

12) Program to calculate students marks and grades

```
echo enter the marks of five students
read m1
read m2
read m3
read m4
read m5
sum='expr $m1 + $m2 + $m3 + $m4 + $m5'
echo The sum of the marks is $sum
avg='expr $sum /5'
echo the value of average is $avg
if [ $m1 -lt 40 -o $m2 -lt 40 -o $m3 -lt
        40 -o $m4 -lt 40 ]
then
    echo Fail
elif [ $avg -ge 70 ]
then
    echo Distinction
elif [ $avg -ge 60 ]
then
    echo First class
elif [ $avg -ge 50 ]
then
    echo Second class
elif [ $avg -ge 40 ]
then
    echo Third class
```

Output :

```
enter the marks of the students
45
45
69
70
67
the sum of marks is 296
the value of average is 59
second class
```

13) program to perform Arithmetic operations and Bitwise calculator.

```
echo enter the value for a and b
read a b
c='expr $a + $b'
echo addition $c
f='expr $a - $b'
echo Subtraction $f
d='expr $a \* $b'
echo multiplication $d
e='expr $a / $b'
echo division $e
h='expr $a % $b'
echo modulus $h
j='expr $c / 2'
echo the avg is $j
```

```
# bitwise calculator

echo enter the value of a and b
read a
read b
c='echo $a + $b | bc'
d='echo $a - $b | bc'
e='echo $a \* $b | bc'
f='echo $a / $b | bc'
g='echo $a % $b | bc'
```

Output:

enter the value for a and b

12 2

addetion 14

subtraction 10

multiplication 24

division 6

modulus 0

the arg is *

```
echo Addition of two numbers is $c
echo Subtraction of two numbers is $d
echo Multiplication of two numbers is $e
echo Division of two numbers is $f
echo Modulus of two numbers is $g
echo the program to use the usage of basic
                    calculator
echo enter the values of C and d
read c
read d
scale=2
res='echo $c + $d |bc'
res1='echo $c - $d |bc'
res4='echo $c / $d |bc'
res5='echo $c %. $d |bc'
echo c+d = $res
echo c-d = $res1
echo c/d = $res4
echo c%.d = $res5
```

Output:

```
enter the value of a and b
4
2
Addition of two numbers is : 6
Subtraction of two numbers is : 2
multiplication of two numbers is : 8
Division of two numbers is : 2
modulus of two numbers is 0
the program to use the usage of basic calculator
enter the value of c and d
 6
 2
c+d = 8
c-d = 4
c/d = 3
c%d = 0
```

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14) Menu driven program for switch case & factorial of a number.

```
echo 1. list of files
echo 2. Current date
echo 3. process status
echo 4. logged in users
echo 5. present working directory
echo 6. exit
echo enter ur option
read ch
case $ch in
        1) ls -l ;;
        2) date ;;
        3) ps ;;
        4) who ;;
        5) pwd ;;
        6) exit ;;
        *) echo Invalid choice ;;
esac
# factorial
echo enter any number :
read n
fact=1
i=1
while [ $i -le $n ]
do
    fact='expr $fact \* $i'
    i='expr $i + 1'
```

output:

1. list of files
2. current date
3. process status
4. logged in users
5. present working directory
6. quit

enter an option
2

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output:

enter any number
6
factorial of 6 is 720