1. Largest of Three Numbers

```
echo "Enter three numbers:"
read a b c

if [ $a -ge $b ] && [ $a -ge $c ]; then
    echo "$a is the largest"
elif [ $b -ge $a ] && [ $b -ge $c ]; then
    echo "$b is the largest"
else
    echo "$c is the largest"
fi
```

2. Leap Year

```
echo "Enter a year:"
read year

if (( (year % 4 == 0 && year % 100 != 0) || (year % 400 == 0) )); then
    echo "$year is a Leap Year"
else
    echo "$year is Not a Leap Year"
fi
```


3. Valid Triangle Check

```
echo "Enter three angles of triangle:"
read a b c

sum=$((a + b + c))

if [ $sum -eq 180 ] && [ $a -gt 0 ] && [ $b -gt 0 ] && [ $c -gt 0 ];
then
    echo "Valid Triangle"
else
    echo "Invalid Triangle"
fi
```

4. Character Type Check

```
echo "Enter a character:"
read ch

case $ch in
    [a-zA-Z]) echo "Alphabet";;
```

```
    [0-9]) echo "Digit";;
    *) echo "Special Character";;
esac
```

5. Profit or Loss

```
echo "Enter Cost Price:"
read cp
echo "Enter Selling Price:"
read sp

if [ $sp -gt $cp ]; then
    profit=$((sp - cp))
    echo "Profit: $profit"
elif [ $cp -gt $sp ]; then
    loss=$((cp - sp))
    echo "Loss: $loss"
else
    echo "No Profit No Loss"
fi
```

6. Even and Odd from 1 to 10


```
echo "Even Numbers:"
for i in {1..10}
do
    if [ $((i % 2)) -eq 0 ]; then
        echo $i
    fi
done

echo "Odd Numbers:"
for i in {1..10}
do
    if [ $((i % 2)) -ne 0 ]; then
        echo $i
    fi
done
```

7. Multiplication Table

```
echo "Enter a number:"
read num

for i in {1..10}
do
```

```
    echo "$num x $i = $((num * i))"
done
```

8. Factorial

```
echo "Enter a number:"
read n
fact=1

for (( i=1; i<=n; i++ ))
do
    fact=$((fact * i))
done

echo "Factorial of $n is $fact"
```

9. Sum of Even Numbers (1 to 10)

```
sum=0
for i in {1..10}
do
    if [ $((i % 2)) -eq 0 ]; then
        sum=$((sum + i))
    fi
done

echo "Sum of even numbers from 1 to 10 is $sum"
```


10. Sum of Digits

```
echo "Enter a number:"
read num
sum=0

while [ $num -gt 0 ]
do
    digit=$((num % 10))
    sum=$((sum + digit))
    num=$((num / 10))
done

echo "Sum of digits: $sum"
```

11. Basic Calculator

```
echo "Enter two numbers:"
read a b

echo "Choose operation: + - * /"
read op

case $op in
    +) echo "Result: $((a + b))";;
    -) echo "Result: $((a - b))";;
    \*) echo "Result: $((a * b))";;
    /) if [ $b -ne 0 ]; then
           echo "Result: $((a / b))"
       else
           echo "Cannot divide by zero"
       fi;;
    *) echo "Invalid operation";;
esac
```

12. Days of the Week


```
days=("Sunday" "Monday" "Tuesday" "Wednesday" "Thursday" "Friday"
"Saturday")

for day in "${days[@]}"
do
    echo $day
done
```

13. First 4 Months with 31 Days

```
months=("January" "March" "May" "July")

for month in "${months[@]}"
do
    echo $month
done
```

14. Using Functions

```
is_amstrong() {
    n=$1
    sum=0
    temp=$n
```

```
    while [ $temp -gt 0 ]; do
        digit=$((temp % 10))
        sum=$((sum + digit * digit * digit))
        temp=$((temp / 10))
    done
    if [ $sum -eq $n ]; then
        echo "Amstrong Number"
    else
        echo "Not Amstrong"
    fi
}

is_palindrome() {
    n=$1
    rev=0
    temp=$n
    while [ $temp -gt 0 ]; do
        digit=$((temp % 10))
        rev=$((rev * 10 + digit))
        temp=$((temp / 10))
    done
    if [ $rev -eq $n ]; then
        echo "Palindrome"
    else
        echo "Not Palindrome"
    fi
}

fibonacci() {
    n=$1
    a=0
    b=1
    echo "Fibonacci series:"
    for (( i=0; i<n; i++ )); do
        echo -n "$a "
        fn=$((a + b))
        a=$b
        b=$fn
    done
    echo
}

is_prime() {
    n=$1
    if [ $n -le 1 ]; then
        echo "Not Prime"
        return
    fi
    for (( i=2; i*i<=n; i++ )); do
```

```
        if [ $((n % i)) -eq 0 ]; then
            echo "Composite"
            return
        fi
    done
    echo "Prime"
}

dec_to_bin() {
    n=$1
    bin=""
    while [ $n -gt 0 ]; do
        bin=$((n % 2))$bin
        n=$((n / 2))
    done
    echo "Binary: $bin"
}
```

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