SECTION 1 : Build recursive call stacks for the following codes.

```
function fun(n)
{
    if (n == 4)
       return n;
    else return 2*fun(n+1);
}
```

fun(2)

```
 function fun( x,  y)
 {
   if (x == 0)
     return y;
   return fun(x - 1,  x + y);
 }
```

fun(4,3)

```
void fun( n)
{
  if (n == 0)
    return;

  console.log(n%2);
  fun(n/2);
}
```

fun(25)

What does the following function do? Check Options

```
 function fun( x,  y)
 {
     if (y == 0)   return 0;
     return (x + fun(x, y-1));
 }
```

A)x+y B)x+x*y C)x*y D)x^y

What does fun2() evaluates? Check options

```
function fun2( a,  b)
{
    if (b == 0) return 1;
    return fun(a, fun2(a, b-1));
}
```

A)x+y B)x+x*y C)x*y D)x^y

```
Function print( n)
{
    if (n > 4000)
        return;
    console.log(n);
    console.log(2*n);
    console.log(n);
}

print(1000);
```

What does the following recursive algorithm do? Analyse outputs for multiple inputs and find out what the below algorithm is solution for.

```
function fun(n)
{
    if (n == 0 || n == 1)
        return n;

    if (n%3 != 0)
        return 0;

    return fun(n/3);
}
```

```
function f( n)
{
    if(n <= 1)
        return 1;
    if(n%2 == 0)
        return f(n/2);
    return f(n/2) + f(n/2+1);
}
```

f(11));

```
function foo( n, r) {
  if (n  > 0) return (n%r +  foo (n/r, r ));
  else return 0;
}
```

foo(513, 2)

```
function robot(n,a,b)
{
   if (n <= 0)  return;
   robot(n-1, a, b+n);
   console.log(n,a,b);
   robot(n-1, b, a+n);
}
```

robot(9,5,2)

```
 function f( n)
 {
    Var i = 1;
    if (n >= 5)
       return n;
    n = n+i;
    i++;
    return f(n);
 }
```

f(1)

```
function ths(n)
{
  if (n < 1) return;
  ths(n-1);
  ths(n-3);
  console.log(n);
}
```

ths(8)

```
void count( n)
{
    var d = 1;
    console.log(n);
    console.log(d);
    d++;
    if(n > 1)
       count(n-1);
    console.log(d);
}
```

count(3)

```
function f( n)
{
 if (n <=1)  {
  console.log(n);
 }
 else {
  f (n/2);
  console.log( n%2);
 }
}
```

f(1024)

```
void f( n)
{
      if (n/2) {
            f(n/2);
      }
      console.log(n%2);
}
```

f(1024)

SECTION 2 : Submit solutions for the following algorithms using git.

1) Write a program to given input Check whether Even or odd.
2) Write a program to Generate Even and Odd Number less than N and Generate ‘N’ Even and Odd Numbers.
3) Write a program to decide given N is Prime or not.
4) Write a program to subtract two integers without using Minus (-) operator
5) Write a program to find remainder of two numbers without using modulus (%) operator
6) Write a program to generate Prime Numbers less than N and Generate ‘N’ Prime Numbers/in given range.
7) Write a program that prints the numbers from 1 to 100 and for multiples of '3' print "Fizz" instead of the number and for the multiples of '5' print "Buzz".
8) Write a program to find the Sum of Array Elements.
9) Write a program for swapping of two arrays
10) Write a program to check whether given character is vowel or consonant
11) Write a program to find the largest number among three numbers
12) Write a program to find the roots of a quadratic equation
13) Write a program to Check Whether the given year is a leap year or not
14) Write a program to check whether a number is a positive number or negative number?
15) Write a program to find power of a number using recursion
16) Write a program check whether given character is an alphabet or not
17) Write a program to classify the triangle as equilateral, isosceles and scalene to the given sides of triangle.(HINT: Solve using semi-perimeter and area)
18) Write a program to find area and circumference of circle
19) Write a program to add and subtract of given (NXN) Matrices
20) Write a program to multiply given 2 (NXN) matrices

21) Write a program to find the trace of given matrix

22) Write a Program to find the Inverse of the Matrix

23) Write a Program to display transpose of a matrix

24) Write An Algorithm using Javascript to swap two numbers using temporary variables, using arithmetic operators, using logical operators?(Swapping should be done using 5 methods)

25) Write a program to Convert Decimal to Binary

26) Write a program using Left Shift Operator (6<<i = 6*2^i) and Derive the General Formula

27) Write a program using Right Shift Operator (6>>i = 6/2**i) and Derive the General Formula

28) Write an algorithm to compute log(n)

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