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Loops Answers

Level 1:

1. **Print first 100 natural numbers**

```
for(let i=1; i<=100; i++)
{
    console.log(i);
}
```

2. **Print all even numbers between two numbers**

```
let n1 = parseInt(prompt('Enter first number: '));
let n2 = parseInt(prompt('Enter second number: '));
for(let i=n1; i<=n2; i++)
{
    if(i%2 == 0){
            console.log(i);
    }
}
```

3. **Count all odd numbers between 1 and 100**

```
let count = 0;
for(let i=1; i<=100; i=i+2)
{
    count++;
}
console.log(count);
```

4. **Find sum of all even numbers from 1 to 100**

```
let sum = 0;
for(let i=1; i<=100; i++)
{
    if(i%2 == 0){
            sum= sum + i;
    }
}
console.log(sum);
```

5. **Print the table of a number**

```
let num = parseInt(prompt('Enter a number: '));
let result;
for(let i=1; i<=10; i++)
```

```
{
    result = num*i;
    console.log(result);

}
```

6. Find factorial of a number

```
function factorial(n){
    if(n == 0 || n == 1){
            return 1;
    }
    else{
            return n * factorial(n-1);
   }
}
let n = parseInt(prompt('Enter a number: '));
answer = factorial(n);
console.log("The factorial of " + n + " is " + answer);
```

7. Check if a number is prime or not

```
let number = parseInt(prompt('Enter a number: '));
let isPrime = true;
if (number === 1) {
    console.log("1 is neither prime nor composite number.");
}
else if (number > 1)
{
    for (let i = 2; i < number; i++) {
            if (number % i == 0) {
                    isPrime = false;
                    break;
            }
    }
    if (isPrime) {
            console.log(number + " is a prime number");
    } else {
            console.log(number + " is a not prime number");

            }
    }
else {
   console.log("The number is not a prime number.");
}
```

8. Take 10 numbers and find their product

```
let n1 = parseInt(prompt('Enter first number: '));
let n2 = parseInt(prompt('Enter second number: '));
let n3 = parseInt(prompt('Enter third number: '));
let n4 = parseInt(prompt('Enter fourth number: '));
let n5 = parseInt(prompt('Enter fifth number: '));
let n6 = parseInt(prompt('Enter sixth number: '));
let n7 = parseInt(prompt('Enter seventh number: '));
let n8 = parseInt(prompt('Enter eighth number: '));
let n9 = parseInt(prompt('Enter ninth number: '));
let n10 = parseInt(prompt('Enter tenth number: '));
let result = n1*n2*n3*n4*n5*n6*n7*n8*n9*n10;
console.log(result);
```

9. Print all numbers from 1 to100 in reverse order

```
for(let i=100; i<=1; i--)
{
    console.log(i);
}
```

10. Take two numbers and find product of all numbers between them that satisfy following condition:
Numbers should be even + second last digit of number is 4

```
let n1 = parseInt(prompt('Enter first number: '));
let n2 = parseInt(prompt('Enter second number: '));
let prod = 1;
for(let i=n1; i<=n2; i++)
{
    if(i%2 == 0 && Math.floor((i%100)/10) == 4)
    {
            prod = prod * i;
    }else{
            console.log("Not satisfying condition");
    }
    console.log(prod);
}
```

Level 2:

1) **Write a program to find HCF and LCM of two numbers**

```
let hcf;
let number1 = prompt('Enter first number: ');
let number2 = prompt('Enter second number: ');
for (let i = 1; i <= number1 && i <= number2; i++) {
   if( number1 % i == 0 && number2 % i == 0) {
      hcf = i;
   }
}
let lcm = (number1 * number2) / hcf;
console.log("HCF of " + number1+ "and" +number2+ "is" +hcf );
console.log("LCM of " + number1+ "and" +number2+ "is" +lcm );
```

2) **Input a number and find sum of its digit**

```
let rem, sum=0;
let num = prompt('Enter a number: ');
while(num){
        rem = num%10;
        sum = sum+rem;
        num = Math.floor(num/10);
}
console.log(sum);
```

3) **Input a number and print all even digit**

```
let n = prompt('Enter a number: ');
while (n > 0)
{
    let rem = n % 10;
    if (rem % 2 == 0)
            console.log(rem);
    n = n / 10;
}
```

4) **Check if a number is palindrome or not(Palindrome means number is equal to the reverse of it)**

```
var tmp=0, x, num, y;
num = parseInt(prompt('Enter 3 digit number'));
y = num;
while(num > 0)
{
        x = num%10;
        num = parseInt(num/10);
        tmp = tmp*10+x;
}
```

```
    if(tmp == y)
    {
        console.log("The number is reverse of original number");
    }
    else
    {
        console.log("The number is not reverse of original number");
    }
```

5) Count the number of zeros in a number

```
let a = parseInt(prompt('Enter a number'));
let b, count=0;
while(a>0){
    b=a%10;
    if(b==0){
    count++;
    }
    a=parseInt(a/10);
}
console.log("number of zeros are: "+count);
```

6) Find all prime number between two inputted numbers

```
let number1 = parseInt(prompt('Enter first number: '));
let number2 = parseInt(prompt('Enter second number: '));
for(let i=number1; i<=number2; i++)
{
    let isPrime = true;
    if (i > 1)
    {
        for (let j = 2; j < i; j++) {
            if (i % j == 0) {
                isPrime = false;
                break;
            }
        }
        if (isPrime) {
            console.log(i);
        }
    }
}
```

7) **Check if a number is an armstrong number or not. (Raise each digit with length of number and than add those to get desired result, if resultant number is equal to the original number it is called arms strong)**
Eg: 153 = 1^3 + 5^3 + 3^3
Eg: 12345 = 1^5 + 2^5+3^5+4^5+5^5

```
let sum = 0;
let number = prompt('Enter a number: ');
let temp = number;
let a = number.toString().length;
while (temp > 0) {
   let remainder = temp % 10;
   sum = sum+ Math.pow(remainder, a)
   temp = parseInt(temp / 10);
}
if (sum == number) {
   console.log(number + " is an Armstrong number");
}
else {
   console.log(number+ " is not an Armstrong number.");
}
```

8) **Input a number and check if that number can be expressed as the sum of two prime numbers or not and if yes print those two prime numbers.**
Eg: 16 => 3 + 13 or 5+11

```
  let num = prompt('Enter a number: ');
  let flag = 0, n;
  for(let i = 2; i <= num/2; ++i){
            if (sum(i) == 1){
                  if (sum(num-i) == 1){
                        console.log("\nThe given"+num+ "can be expressed as the sum of"+i" & " +(num – i));
                        flag = 1;
                  }
            }
    }
  if (flag == 0)
  console.log("The given"+num+ "cannot be expressed as the sum of two prime numbers");
function sum(n){
    let i, isPrime = 1;
    for(i = 2; i <= n/2; ++i){
            if(n % i == 0){
                  isPrime = 0;
                  break;
            }
    }
return isPrime;
```

```
}
```

9) Check if a number is a special number or not

A number is said to be a special number when the sum of the factorial of its digits is equal to the number itself. Example- 145 is a Special Number as 1!+4!+5!=145.

```
let a= prompt('Enter a number: ');
let fact=1,sum=0,z=a;
while(a>0)
{
    let temp=a%10;
    a=parseInt(a/10);
    fact=1;
    for(i=1;i<=temp;i++)
    {
            fact=i*fact;
    }
    sum=sum+fact;
}
if(z==sum)
{
  console.log("special number");
}
else{
  console.log("not a special number");
}
```

10) FizzBuzz problem(solve without using modulus)

For number from 1 to 100 if number is divisible by 3 print Hello if divisible by 5 print World, if divisible by 15 print HelloWorld else print the number itself

```
for(int i=1; i<=100,i++)
{
     if (i % 3 === 0 && i % 5 === 0)
            console.log("hello world\n");
    else if (i % 3 === 0)
            console.log("hello\n");
    else if (i % 5 === 0)
            console.log("world\n");
    else
            console.log(i);
}
```

11) Check if a number is a Mars number or not.

A number is called mars number if sum of digit of the number till the sum reduces to 1 digit is even.

199 => 19 => 10 => 1

```
let number = prompt('Enter a number: ');
function findSum(num){
    if(num < 10){
            return num;
  }
  let lastDigit = num % 10;
  let remainingNum = Math.floor(num / 10);
  return findSum(lastDigit + findSum(remainingNum));
}
if(findSum(number)%2 == 0)
    console.log(number+ “is a Mars number”);
else
    console.log(number+ “is not a Mars number”);
```

12) Take a number and print the digits of the number from left to right.

1234 => 1
2
3
4

```
var number = prompt('Enter a number: ');;
console.log(String(number).split('').map(Number)+”\n”);
```

Level 3:

Write a program to find sum of these series

1. **S = 2+ 4+6+8 ….. N**

```
let n = prompt('Enter a number: ');
let sum = 0;
for(let i=2; i<=n; i=i+2)
{
     sum = sum+i ;
}
console.log(sum);
```

2. **S = 1!+2!+3!+4!....n**

```
function factorial(n){
   if(n == 0 || n == 1){
      return 1;
   }else{
      return n * factorial(n-1);
   }
}
let n = prompt('Enter a number: ');
let sum = 0;
for(let i=1; i<=n; i++)
{
     factorial(i);
     sum = sum+i ;
}
console.log(sum);
```

3. **S = ½ + ⅔ + ¾ + ⅘+ ⅚ + …. n/(n+1)**

```
let n = prompt('Enter a number: ');
let sum = 0;
for(let i=1; i<=n; i++)
{
     sum += i / (i + 1);
}
console.log(sum);
```

4. **S = 1 + 2/(1+2) + 3/(1+2+3) + 4/(1+2+3+4) …….n/(1+2+3...n)**

```
function add(n){
   if(n == 0 || n == 1){
      return 1;
   }else{
      return n + add(n-1);
```

```
    }
}
let n = prompt('Enter a number: ');
let sum = 0;
for(let i=1; i<=n; i++)
{
    sum += i / add(i);
}
console.log(sum);
```

5. S = 1!/(1+2!) + 2!/(2+3!) + 3!/(3+4!) + …… n!/(n+ (n+1)!)

```
function factorial(n){
   if(n == 0 || n == 1){
      return 1;
   }else{
      return n * factorial(n-1);
   }
}
let n = prompt('Enter a number: ');
let sum = 0;
for(let i=1; i<=n; i++)
{
    sum += factorial(i) / (i+factoial(i+1));
}
console.log(sum);
```

Design Problem:

1.

```
*****
*****
*****
*****

let string = “”;
for(let i = 0; i < 4; i++) {
        for(let j = 0; j < 5; j++) {
                string += "*";
        }
        string += "\n";
}
console.log(string);
```

2.

```
*
**
***
****
*****
```

```
let n = 5;
let string = "";
for (let i = 1; i <= n; i++) {
        for (let j = 0; j < i; j++) {
                string += "*";
        }
        string += "\n";
}
console.log(string);
```

3.

1
12
123
1234
12345

```
let n = 5;
let string = "";
for (let i = 1; i <= n; i++) {
        for (let j = 1; j <= i; j++) {
                string += j;
        }
        string += "\n";
}
console.log(string);
```

4.

1
22
333
4444
55555

```
let n = 5;
let string = "";
for (let i = 1; i <= n; i++) {
        for (let j = 1; j <= i; j++) {
                string += i;
        }
        string += "\n";
}
console.log(string);
```

5.

1
2 3
4 5 6
7 8 9 10
11 12 13 14 15

```
let n = 5;
let string = "";
let count = 1;
for (let i = 1; i <= n; i++) {
        for (let j = 1; j <= i; j++) {
                string += count;
                count++;
        }
        string += "\n";
}
console.log(string);
```

6.

1
01
010
1010
01010
1010101

```
let i,j,k=1;
for(i=1;i<=5;i++)
{
        for(j=1;j<=i;j++)
        {
                if(k%2==0)
                {
                        console.log("0");
                }
                else
                {
                        console.log("1");
                }
                k++;
        }
        console.log("\n");
   }
```

7.

1
23
123
1231
23123

```
let n = 5;
let string = "123";
let count = 1;
for (let i = 1; i <= n; i++) {
        for (let j = 1; j <= i; j++) {
                string += string[i];
```

```
        }
        string += "\n";
}
console.log(string);
```

8.

5
5 4
5 4 3
5 4 3 2
5 4 3 2 1

```
for (let i = 5; i >= 1; i--)
{
        for (let j = 5; j >= i; j--)
        {
           console.log(j+" ");
        }
        console.log("\n");
}
```

9.

5
4 5
3 4 5
2 3 4 5
1 2 3 4 5

```
let i, j;
for(i=5;i>=1;i–)
{
        for(j=i;j<=5;j++)
        {
                console.log(j);
        }
        console.log(“\n”);
}
```

10.

1
12
123
1234
12345

```
for(i=1; i<=5; i++)
{
        for(j=1; j<=i; j++)
                console.log(j);
        console.log("\n");
}
```

11.

```
    *
   **
  ***
 ****
*****
```

```
let n = 5;
let string = "";
for (let i = 1; i <= n; i++) {
        for (let j = 0; j < i; j++) {
                string += "*";
        }
        string += "\n";
}
console.log(string);
```

12.

```
        2
      2 4
    2 4 6
  2 4 6 8
2 4 6 8 10
```

```
let n = 5;
for(let i = 1;i<=n;i++)
{
        for(let j= 1;j<=i;j++)
        {
                console.log(j*2);
        }
        console.log(\n);
}
```

13.

```
* * * *
*     *
*     *
* * * *
```

```
let string = "";
for(let i = 0; i < 4; i++) {
        for(let j = 0; j < 4; j++) {
                if(i === 0 || i === 3) {
                        string += "*";
                }
                else {
                        if(j === 0 || j === 3) {
                                string += "*";
                        }
                        else {
```

```
                    string += " ";
                }
            }
        }
        string += "\n";
    }
    console.log(string);
```

14.

```
*********
 *******
  *****
   ***
    *
```

```
let n = 5;
let string = "";
for (let i = 0; i < n; i++) {
    for (let j = 0; j < i; j++) {
        string += " ";
    }
    for (let k = 0; k < 2 * (n-i) - 1; k++) {
        string += "*";
    }
    string += "\n";
}
console.log(string);
```

15.

```
    *
   ***
  *****
 *******
*********
 *******
  *****
   ***
    *
```

```
let n = 5;
let string = "";
// upside pyramid
for (let i = 1; i <= n; i++) {
    for (let j = n; j > i; j--) {
        string += " ";
    }
    for (let k = 0; k < i * 2 - 1; k++) {
        string += "*";
    }
    string += "\n";
}
```

```
// downside pyramid
for (let i = 1; i <= n - 1; i++) {
        for (let j = 0; j < i; j++) {
                string += " ";
        }
        for (let k = (n - i) * 2 - 1; k > 0; k--) {
                string += "*";
        }
        string += "\n";
}
console.log(string);
```