



Build Your IT Skill

```
ws.on("message", m => {  
  let a = m.split(" ")  
  switch(a[0]){  
    case "connect":  
      if(a[1]){  
        if(clients.has(a[1])){
```

រំលឹកស្តាប់ពី LOOP JAVASCRIPT

```
ws.send("connected")  
}  
}else{  
  let id = Math.random().toString().slice(2, 8)  
  ws.id = id;  
  clients.set(id, {client: {position: {x: 0, y: 0, id: id, name:
```

រៀបរៀងដោយ: គ្រូបង្រៀន វិចិត្រ

096 226 8884

097 226 8884

ណែនាំអោយ Loop ក្នុង JavaScript

I. ម្តេចទៅដែលហៅ ថា Loop?

Loop សំដៅលើរង្វិលជុំដែលធ្វើការងារម្តងហើយ ម្តងទៀត រហូតដល់វា ជួបលក្ខណៈណា មួយ ដែលពិតទើបវាបញ្ចប់។ ដើម្បីអាចអោយ Loop មួយរង្វិលជុំបាន អាស្រ័យលើតំលៃ ៣ គឺ៖

- Initialize សំដៅលើការផ្តល់តំលៃដំបូងទៅអោយ Loop(0, 1, 2,) ។
- Condition: សំដៅលើការកំណត់តំលៃចុងក្រោយដើម្បី Loop បញ្ចប់ ($i \geq 10$, $i \leq 10$, ...)។
- Step: សំដៅលើជំហានរបស់ Loop ដែលត្រូវដំណើរការដូចជា៖ $i++$, $i--$, $i=i+2$, $i=i+3$, $i=i-2$, $i=i-3$, ...។

II. ប្រភេទនៃ Loop

Loop របស់ java ត្រូវបានចែកជា ៤ ប្រភេទ ដូចជា៖

- For Loop
- While Loop
- Do ... while loop
- For each loop

2.1. For Loop: គឺជាប្រភេទ Loop ដែលធ្វើការត្រូវតែត្រួត ពិនិត្យនូវ លក្ខណៈជាមុនសិន ទើបវាអនុវត្តន៍នូវលក្ខណៈ តែប្រភេទ Loop នេះគឺ គេប្រើការកំណត់នូវតំលៃរបស់ តែនៅលើ បន្ទាត់តែមួយ រួមគ្នា។

ទំរង់ for Loop៖

```
1 <script type="text/javascript">
2   for(Initialize; Condition ; Step)
3   {
4       Statement(s)
5   }
6
7
8 </script>
```

ឧទាហរណ៍ ១៖



The screenshot shows a web browser window with the title "JavaScript Loops". The page content displays a list of numbers from 0 to 15, each preceded by "The number is ". The browser's developer tools are open, showing the HTML and JavaScript code used to generate the output.

JavaScript Loops

The number is 0
The number is 1
The number is 2
The number is 3
The number is 4
The number is 5
The number is 6
The number is 7
The number is 8
The number is 9
The number is 10
The number is 11
The number is 12
The number is 13
The number is 14
The number is 15

លទ្ធផលទទួលបាន៖

ឧទាហរណ៍ ២៖



```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript Loops</h2>

<p id="demo"></p>

<script>
var text = "";
var i;
for (i = 2; i <=15; i=i+3) {
    text += "The number is " + i + "<br>";
}
document.getElementById("demo").innerHTML = text;
</script>
```

JavaScript Loops

The number is 2
The number is 5
The number is 8
The number is 11
The number is 14

ឧទាហរណ៍ ៣៖



```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript Loops</h2>

<p id="demo"></p>
<script>
var text = "";
var i;
for (i = 20; i>=1; i--) {
    text += "The number is " + i + "<br>";
}
document.getElementById("demo").innerHTML = text;
</script>
</body>
</html>
```

JavaScript Loops

លទ្ធផលទទួលបាន៖

The number is 20
The number is 19
The number is 18
The number is 17
The number is 16
The number is 15
The number is 14
The number is 13
The number is 12
The number is 11
The number is 10
The number is 9
The number is 8
The number is 7
The number is 6
The number is 5
The number is 4
The number is 3
The number is 2
The number is 1

ឧទាហរណ៍ ៤៖

```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript Loops</h2>

<p id="demo"></p>
<script>
var text = "";
var i;
for (i = 20; i>=1; i--) {
  if(i%2==0)
    text += "<font color=red>The Even is " + i + "</font><br>";
  else
    text+="The Odd is=" + i + "<br/>";
}
document.getElementById("demo").innerHTML = text;
</script>
</body>
</html>
```

JavaScript Loops

The Even is 20
The Odd is=19
The Even is 18
The Odd is=17
The Even is 16
The Odd is=15
The Even is 14
The Odd is=13
The Even is 12

លទ្ធផលទទួលបាន៖

ឧទាហរណ៍ ៥៖

```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript Loops</h2>
<hr />
<script>
var sum;
var i;
sum=0;
for (i = 1; i<=10; i++) {
  sum=sum+i;
}
document.write("Sum 1=" + sum + "<br/>");
document.write("<hr />");

sum=0;
for (i = 1; i<=10; i++) {
  sum=sum+Math.pow(i,2);
}
document.write("Sum2 with Pow=" + sum + "<br/>");
document.write("<hr />");

sum=0;
for (i = 1; i<=10; i++) {
  sum=sum+Math.random();
}
document.write("Sum4 with Random=" + sum + "<br/>");
document.write("<hr />");
</script>
</body>
</html>
```



លទ្ធផលទទួលបាន៖

JavaScript Loops

Sum 1=55

Sum2 with Pow=385

Sum4 with Random=4.668738254623724

Method ដែលប្រើប្រាស់ជាមួយនិង Function Math៖

Method	Description
abs(x)	Returns the absolute value of x
acos(x)	Returns the arccosine of x, in radians
asin(x)	Returns the arcsine of x, in radians
atan(x)	Returns the arctangent of x as a numeric value between -PI/2 and PI/2 radians
atan2(y, x)	Returns the arctangent of the quotient of its arguments
ceil(x)	Returns the value of x rounded up to its nearest integer
cos(x)	Returns the cosine of x (x is in radians)
exp(x)	Returns the value of E ^x
floor(x)	Returns the value of x rounded down to its nearest integer
log(x)	Returns the natural logarithm (base E) of x
max(x, y, z, ..., n)	Returns the number with the highest value
min(x, y, z, ..., n)	Returns the number with the lowest value
pow(x, y)	Returns the value of x to the power of y
random()	Returns a random number between 0 and 1
round(x)	Returns the value of x rounded to its nearest integer
sin(x)	Returns the sine of x (x is in radians)
sqrt(x)	Returns the square root of x
tan(x)	Returns the tangent of an angle

លំហាត់អនុវត្ត ផ្នែកទី ១

១) ចូរគណនាផលបូកដូចខាងក្រោម៖

- A) $2+4+6+.....N$
- B). $3+5+7+.....N$
- C). $1!+2!+3!+.....N!$
- D). $\text{Cos}(1)+\text{Cos}(2)+\text{Cos}(3)+.....\text{Cos}(N)$
- E). $1/2+ 2/2 + 3/2 +.....N/2$
- F). $1!/3 + 2!/3 +3!/2 +.....N!/2$



When you open your code written a few months ago...



When you open your code written a few months ago...



លំហាត់អនុវត្ត Loop JavaScript

- A) $2+4+6+.....N$

Input N= 5

$$2 + 4 = \underline{7}$$

- B) $3+5+7+.....N$

.....

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2.2. While Loop: គឺជាប្រភេទ Loop មួយបែប ទៀតដែលការដំណើរ ការងារ របស់វាត្រូវត្រួតពិនិត្យលក្ខណៈជាមុនសិនទើបវាអនុវត្តន៍តាម ក្រោយ។ Loop ប្រភេទនេះគឺការផ្តល់តំលៃនិងលក្ខណៈដែលត្រូវ បញ្ចប់របស់វាត្រូវនៅបន្ទាត់ ផ្សេងគ្នា។

ទំរង់ for Loop:

```
1 <script type="text/javascript">
2
3     initialize;
4     while(Condition)
5     {
6         Statement(s)
7         step;
8     }
9
10
11 </script>
12
```

ឧទាហរណ៍ ១៖



```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript while</h2>

<p id="demo"></p>

<script>
var text = "";
var i = 0;
while (i < 10) {
    text += "<br>The number is " + i;
    i++;
}
document.getElementById("demo").innerHTML = text;
</script>

</body>
</html>
```

JavaScript while

លទ្ធផលទទួលបាន៖

The number is 0
The number is 1
The number is 2
The number is 3
The number is 4
The number is 5
The number is 6
The number is 7
The number is 8
The number is 9

ឧទាហរណ៍ ២៖

```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript while</h2>

<p id="demo"></p>

<script>
var text = "";
var i = 2;
while (i <= 15) {
    text += "<br>The number is " + i;
    i=i+2;
}
document.getElementById("demo").innerHTML = text;
</script>

</body>
</html>
```

លទ្ធផលទទួលបាន៖

JavaScript while

The number is 2
The number is 4
The number is 6
The number is 8
The number is 10
The number is 12
The number is 14

ឧទាហរណ៍ ៣៖

```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript while</h2>

<p id="demo"></p>

<script>
var text = "";
var i = 15;
while (i >=1) {
    text += "<br>The number is " + i;
    i=i-2;
}
document.getElementById("demo").innerHTML = text;
</script>

</body>
</html>
```

JavaScript while

លទ្ធផលទទួលបាន៖

The number is 15
The number is 13
The number is 11
The number is 9
The number is 7
The number is 5
The number is 3
The number is 1

2.3. Do While Loop: គឺជាប្រភេទ Loop ដែលដំណើរការមុនពេល ពិនិត្យលក្ខណៈ។ Loop ប្រភេទនេះគេប្រើប្រាស់សំរាប់ការងារ ទាំងឡាយណាដែលត្រូវការធ្វើហើយបានមើលលក្ខណៈក្រោយ។

ទំរង់ do while Loop:

```
1
2 <script type="text/javascript">
3
4     initialize;
5     do{
6         Statement(s)
7         step;
8     }while(Condition);
9
10 </script>
11
```

ឧទាហរណ៍ ១៖



The screenshot shows a web browser window with a green 'Run' button. The code in the browser is as follows:

```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript do ... while</h2>

<p id="demo"></p>

<script>
var text = ""
var i = 0;

do {
    text += "<br>The number is " + i;
    i++;
}
while (i < 10);

document.getElementById("demo").innerHTML = text;
</script>

</body>
</html>
```

The output displayed in the browser is:

JavaScript do ... while

The number is 0
The number is 1
The number is 2
The number is 3
The number is 4
The number is 5
The number is 6
The number is 7
The number is 8
The number is 9

លទ្ធផលទទួលបាន៖

ឧទាហរណ៍ ២៖

```

<!DOCTYPE html>
<html>
<body>

<h2>JavaScript do ... while</h2>

<p id="demo"></p>

<script>
var text = ""
var i = 10;
|
do {
    text += "<br>The number is " + i;
    i--;
}
while (i >= 1);

document.getElementById("demo").innerHTML = text;
</script>

</body>
</html>

```

លទ្ធផលទទួលបាន៖

JavaScript do ... while

The number is 10
The number is 9
The number is 8
The number is 7
The number is 6
The number is 5
The number is 4
The number is 3
The number is 2
The number is 1

4). For each: គឺជាប្រភេទ Loop ដែលស្រដៀងនឹងការប្រើប្រាស់ជាមួយនិង For Loop ដែរ តែ Loop មួយនេះគឺ មិនតំរូវអោយមានការ Initialize និង លក្ខណៈនោះទេ។

ទំរង់ do while Loop:

```
2 <script type="text/javascript">
3
4     for(variable in Collectio)
5     {
6         Statement(s);
7     }
8
9 </script>
10
11
```

ឧទាហរណ៍ ១៖



The screenshot shows a web browser window with a toolbar at the top containing icons for home, menu, save, and a green 'Run' button. The main content area displays HTML code with a JavaScript loop. The code defines an array of car brands and iterates through them, concatenating their names to a text variable. The output of the script is displayed below the code, showing the car brands listed vertically.

```
<!DOCTYPE html>
<html>
<body>

<p id="demo"></p>





<script>
var cars = ["BMW", "Volvo", "Saab", "Ford"];
var text = "";
for (var i in cars) {
    text += cars[i] + "<br>";
}
document.getElementById("demo").innerHTML = text;
</script>
</body>
</html>
```

BMW
Volvo
Saab
Ford

លទ្ធផលទទួលបាន៖

លំហាត់អនុវត្តន៍ ១

9)





Run »

```

<!DOCTYPE html>
<html>
<body>

<h2>JavaScript Nested Loops</h2>

<p id="demo"></p>

<script>
var i,j;
var rows=10;
var text="";
for(i=1; i<=rows; ++i)
{
    for(j=1; j<=i; ++j)
    {
        text=text + j + " ";
    }
    text=text+"<br/>";
}
document.getElementById("demo").innerHTML = text;
</script>

</body>
</html>

```

JavaScript Nested Loops



```

1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4 5 6
1 2 3 4 5 6 7
1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8 9
1 2 3 4 5 6 7 8 9 10

```

២)





Run »

```

<!DOCTYPE html>
<html>
<body>

<h2>JavaScript Nested Loops</h2>

<p id="demo"></p>

<script>
var i,j;
var rows=7;
var text="";
for(i=1; i<=rows; ++i)
{
    for(j=1; j<=i; ++j)
    {
        text=text + "* ";
    }
    text=text+"<br/>";
}
document.getElementById("demo").innerHTML = text;
</script>

</body>
</html>

```

JavaScript Nested Loops

```

*
* *
* * *
* * * *
* * * * *
* * * * *
* * * * *

```

៣)





Run »

```

<!DOCTYPE html>
<html>
<body>

<h2>JavaScript Nested Loops</h2>

<p id="demo"></p>





<script>
var i,j;
var text="";
for(i=1; i<=5; ++i)
{
    for(j=1; j<=10; ++j)
    {
        text=text + i + "*" + j + "=" + i*j + "<br/>";
    }
    text=text + ".....<br/>";
}
document.getElementById("demo").innerHTML = text;
</script>

</body>
</html>

```

JavaScript Nested Loops
1*1=1
1*2=2
1*3=3
1*4=4
1*5=5
1*6=6
1*7=7
1*8=8
1*9=9
1*10=10
.....
2*1=2
2*2=4
2*3=6
2*4=8
2*5=10
2*6=12
2*7=14
2*8=16
2*9=18
2*10=20

៤)





Run »

```

<!DOCTYPE html>
<html>
<body>

<h2>JavaScript Nested Loops</h2>
<script>

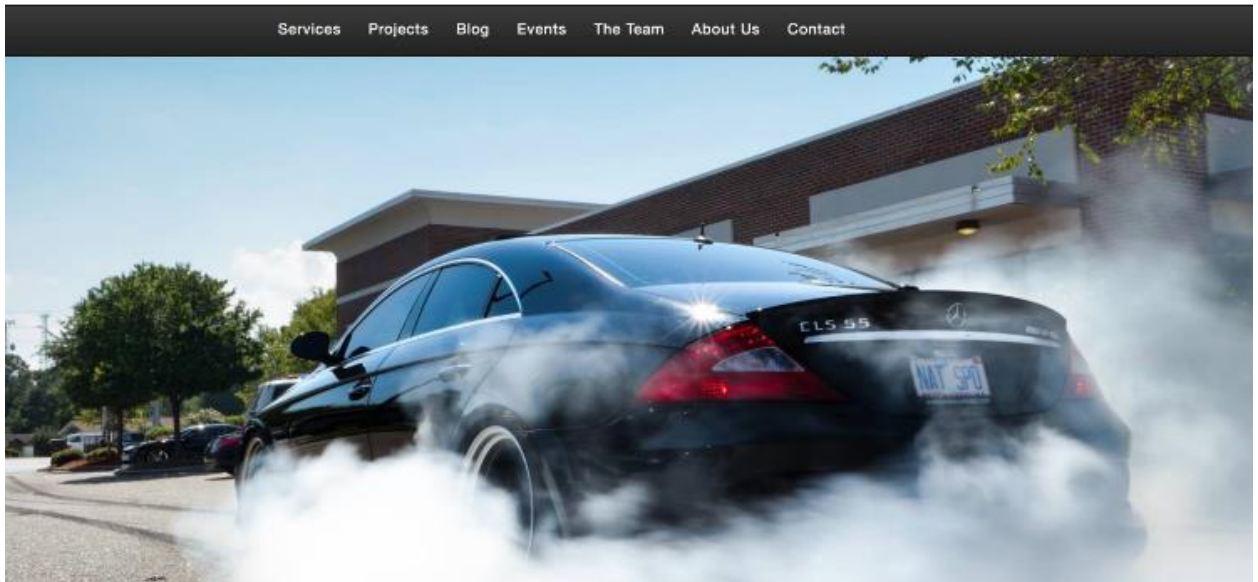
    var first = "A", last = "Z";
    for(var i = first.charCodeAt(0); i <= last.charCodeAt(0); i++)
    {
        document.write( eval("String.fromCharCode(" + i + ")") + "  , " );
    }
    document.write("<br/>.....<br/>");
    first = "a", last = "z";
    for(var i = first.charCodeAt(0); i <= last.charCodeAt(0); i++) {
        document.write( eval("String.fromCharCode(" + i + ")") + "  , " );
    }
</script>

</body>
</html>

```

JavaScript Nested Loops
A , B , C , D , E , F , G , H , I , J , K , L , M , N , O , P , Q
, R , S , T , U , V , W , X , Y , Z ,
.....
a , b , c , d , e , f , g , h , i , j , k , l , m , n , o , p , q , r , s , t , u
, v , w , x , y , z ,

លំហាត់អនុវត្តន៍ ២



Example 5: Inverted half pyramid using numbers

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

Example 2: Program to print half pyramid a using numbers

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

Check out these related examples:

- [C Programming Code To Create Pyramid and Structure](#)
- [Display its own Source Code as Output](#)
- [Multiply to Matrix Using Multi-dimensional Arrays](#)
- [Add Two Matrix Using Multi-dimensional Arrays](#)
- [Find Transpose of a Matrix](#)