LOOPS

Loops:

In JavaScript, the for loop is used for iterating over a block of code a certain number of times, or to iterate over the elements of an array.

For loop:

The **JavaScript for loop** *iterates the elements for the fixed number of times*. It should be used if number of iteration is known. The syntax of for loop is given below.
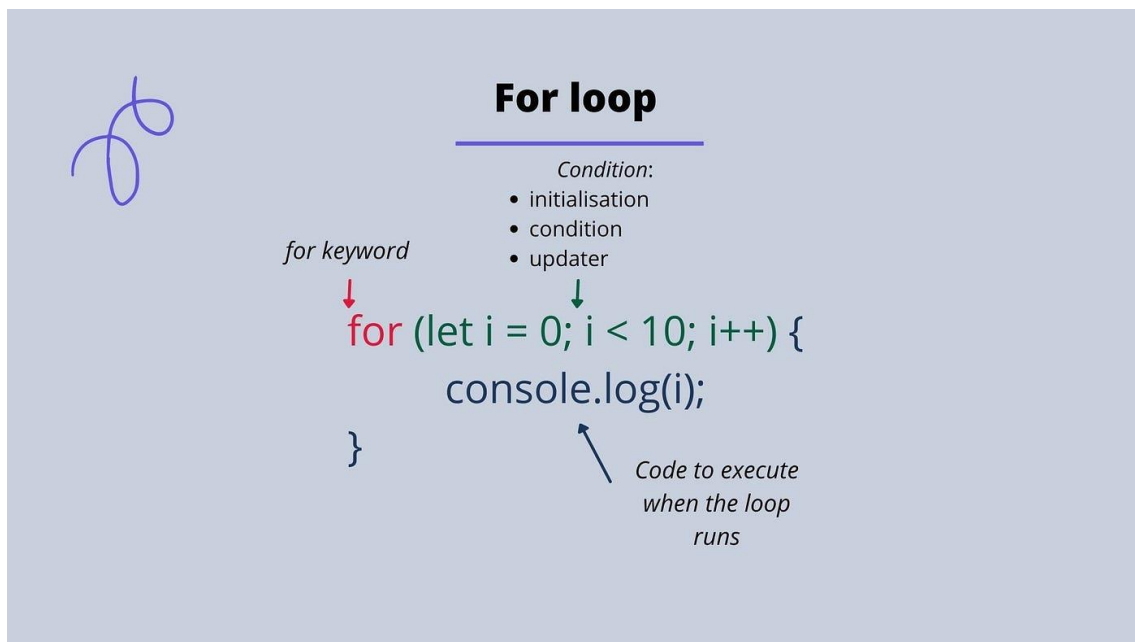
Syntax:
```
for (initialization; condition; increment)
{
   code to be executed
}
```
Example:
```
<script>
for (i=1; i<=5; i++)
{
document.write(i + "<br/>")
}
</script>
```
Output:
1
2
3
4
5

Nested For loop:

If we have loop inside loop, this is called a nested loop.

Example:

```html
<script>
    for(var i=1; i<=5; i++){
        console.log("Table "+ i);
        for(var j=1; j<=10; j++){

            var x=i*j;
            console.log(i+ " * "+j+'='+x);

        }
    }
</script>
```


for(var i=10; i<=15; i++)

initialisation	condition	updatation	o/p
i =10	true	true	10
i = 11	true	true	11
i =12	true	true	12
i =13	true	true	13
i =14	true	true	14
i =15	true	true	15
i = 16	false	~~~~	X

Example:- 7 table

```
for ( var i= 0; i<=10; i++) {
    console.log ("7*"+i +"= " + 7*i );
}
```

Example: Tables

```
var User = tprompt ("Enter a table num");
for (var i=0; i<=10; i++) {
    console.log (User +"i"+ i + "= "+ User*i );
}
```

Example:- break the loop

```
for(i=1; i<=20; i++){
    if (i%2==0){
        console.log(i+ "is even");
        break;
    }
    else{
        console.log(i);
    }
}
```

Example:- continue for skip the current iteration.

```
for (i=1; i<=2; i++){
    if (i%2==0){
        continue;
        console.log(i);
    }
    else{
        console.log(i)
    }
}
```

Example:- sum of even numbers

```
var count =0;
for (i=1; i<=10; i++){
    if (i%12==0){
        count = count +1;
    }
}
console.log(count);    //30
```
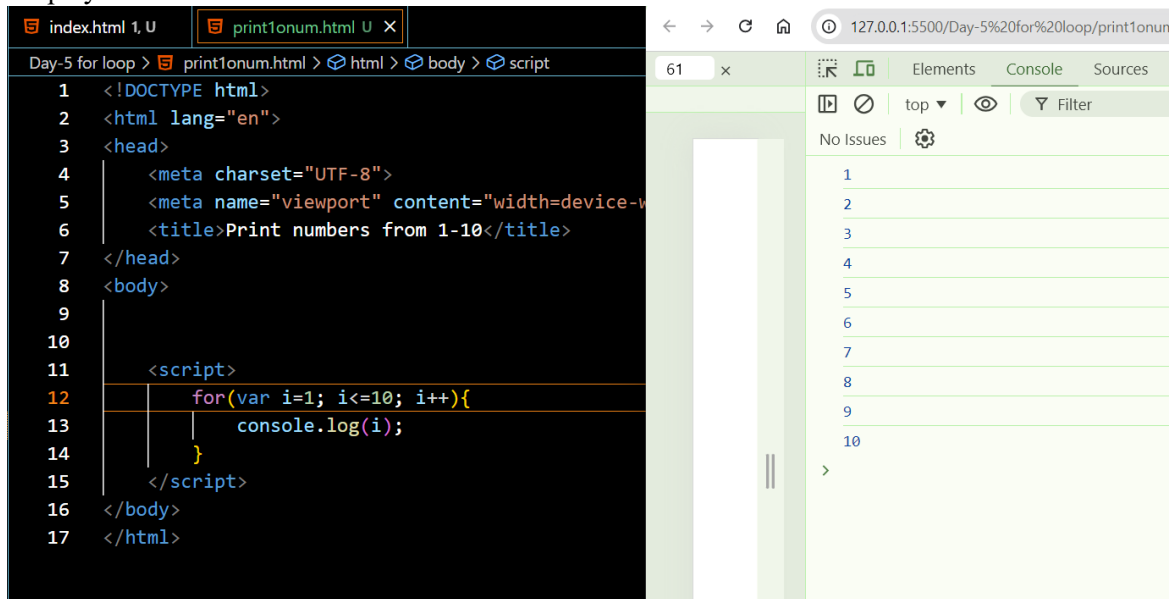
Task 1: Print Numbers from 1 to 10

Instructions:

Use a for loop to print numbers from 1 to 10.

Display the numbers in the console.

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-w
    <title>Print numbers from 1-10</title>
</head>
<body>


    <script>
        for(var i=1; i<=10; i++){
            console.log(i);
        }
    </script>
</body>
</html>
```
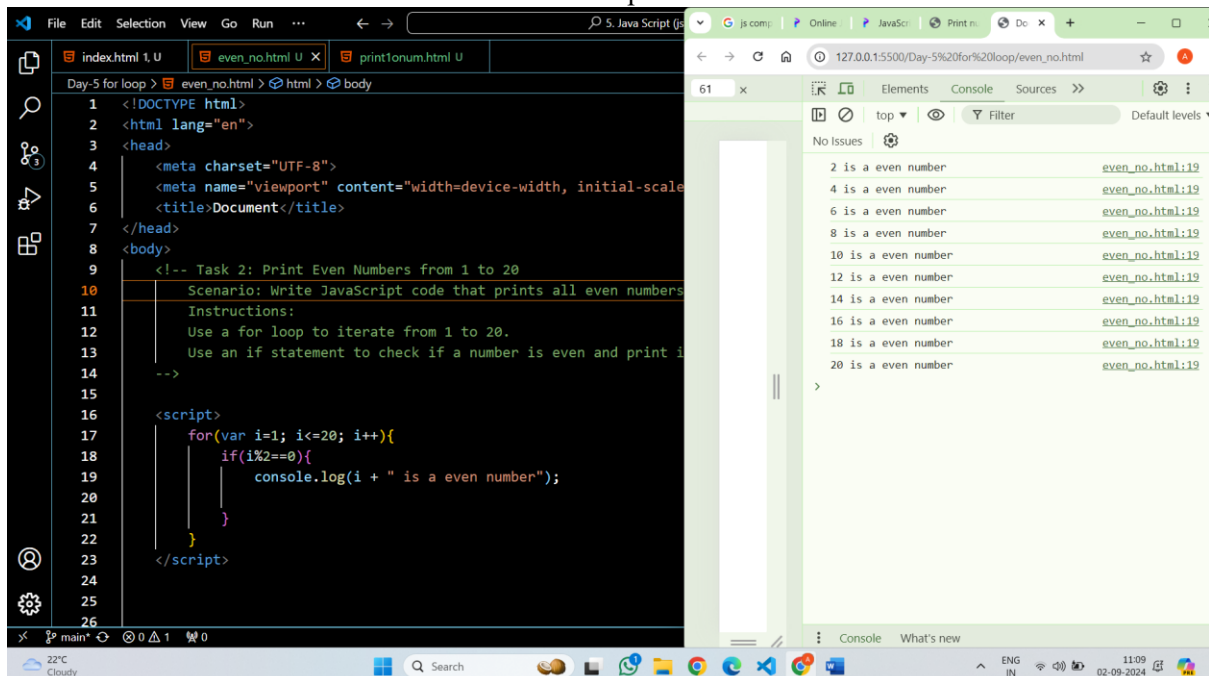
Task 2: Print Even Numbers from 1 to 20

Scenario: Write JavaScript code that prints all even numbers from 1 to 20.

Instructions:

Use a for loop to iterate from 1 to 20.

Use an if statement to check if a number is even and print it.

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale
    <title>Document</title>
</head>
<body>
    <!-- Task 2: Print Even Numbers from 1 to 20
    Scenario: Write JavaScript code that prints all even numbers
    Instructions:
    Use a for loop to iterate from 1 to 20.
    Use an if statement to check if a number is even and print i
    -->

    <script>
        for(var i=1; i<=20; i++){
            if(i%2==0){
                console.log(i + " is a even number");
            }
        }
    </script>
```

Task 3: Print Multiples of 5 up to 50

Scenario: Write JavaScript code that prints all multiples of 5 up to 50.

Instructions:

Use a for loop to iterate from 1 to 50.

Use an if statement to check if a number is a multiple of 5 and print it.
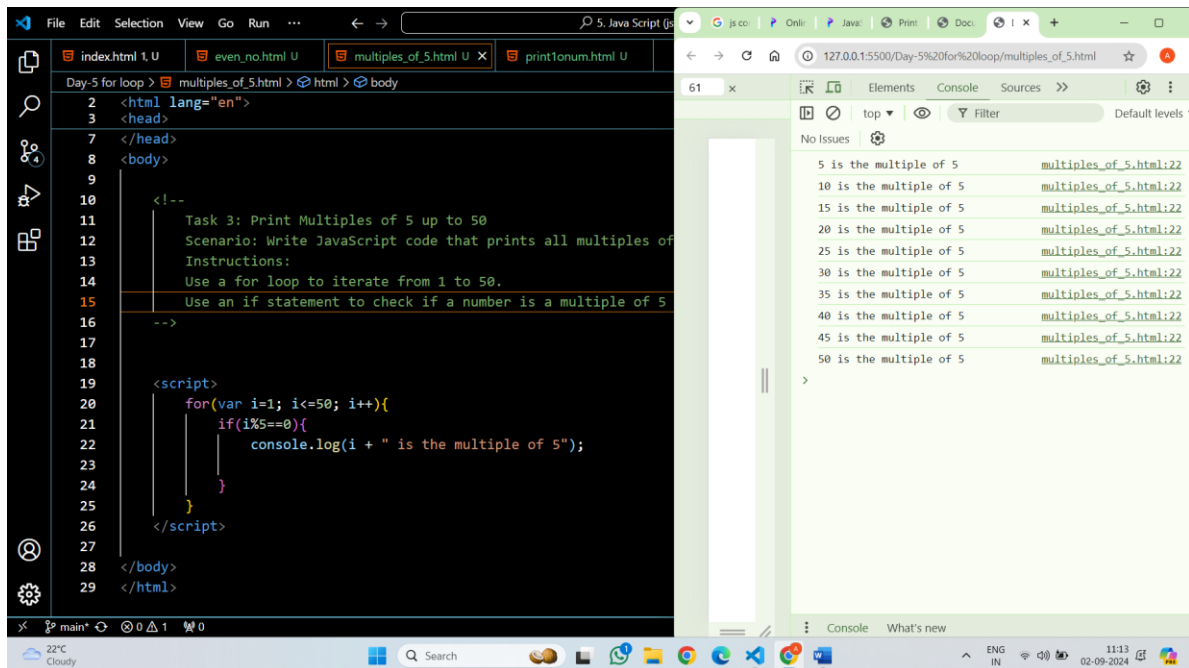
Task 4: Sum of Numbers from 1 to 100

Scenario: Write JavaScript code that calculates the sum of numbers from 1 to 100.

Instructions:

Use a for loop to iterate from 1 to 100.

Add each number to a sum variable and print the total sum.
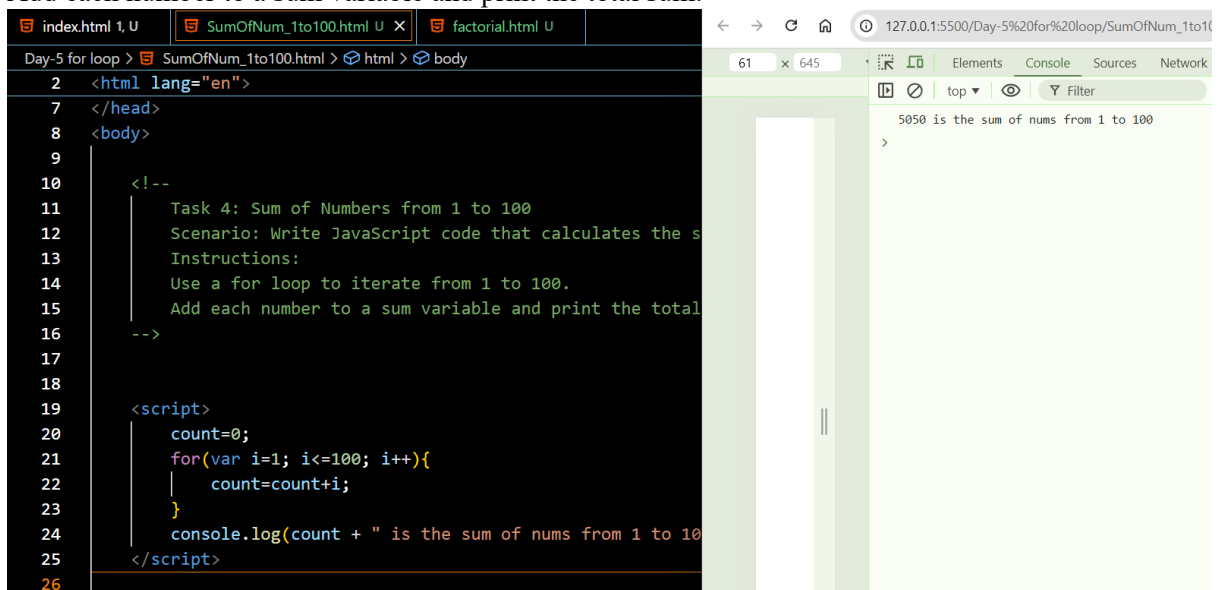
Task 5: Create a JavaScript program that calculates the factorial of a given number using a for loop.

Instructions:

Use a for loop to multiplication the given

Take prompt from the user

hint: take count value as 1;
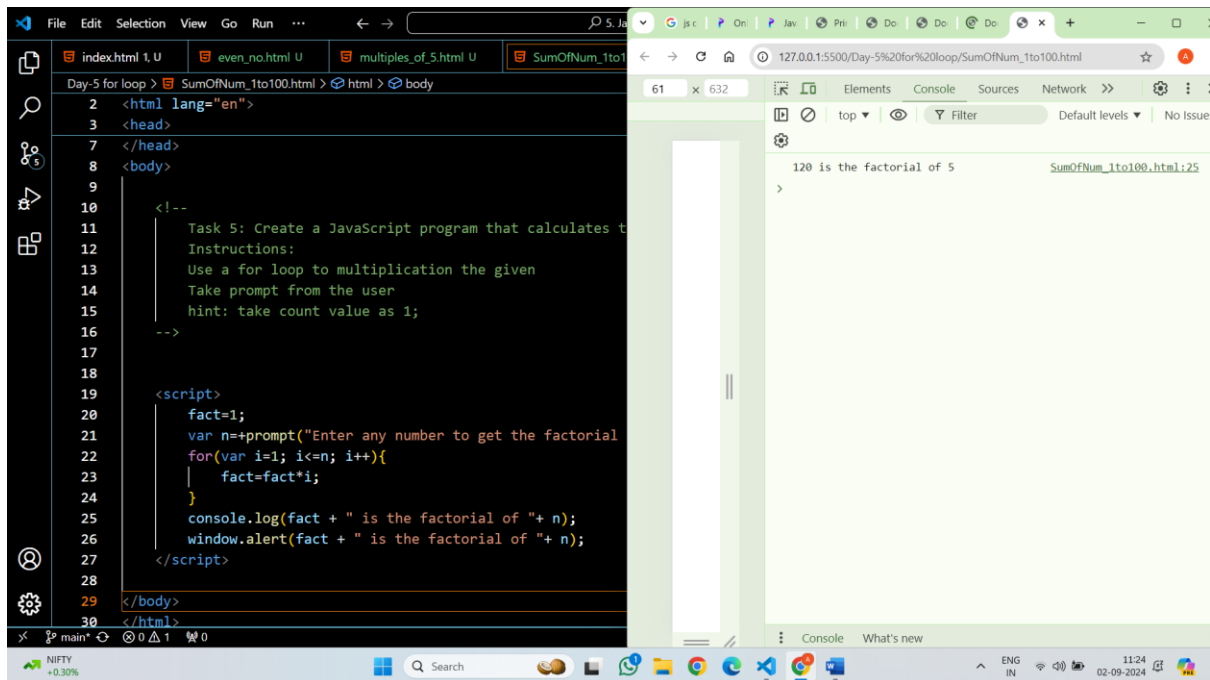
Task 6: Print Numbers in Reverse Order

Scenario: Write JavaScript code that prints numbers from 10 to 1 in reverse order.

Instructions:

Use a for loop to count down from 10 to 1.

Display the numbers in the console.
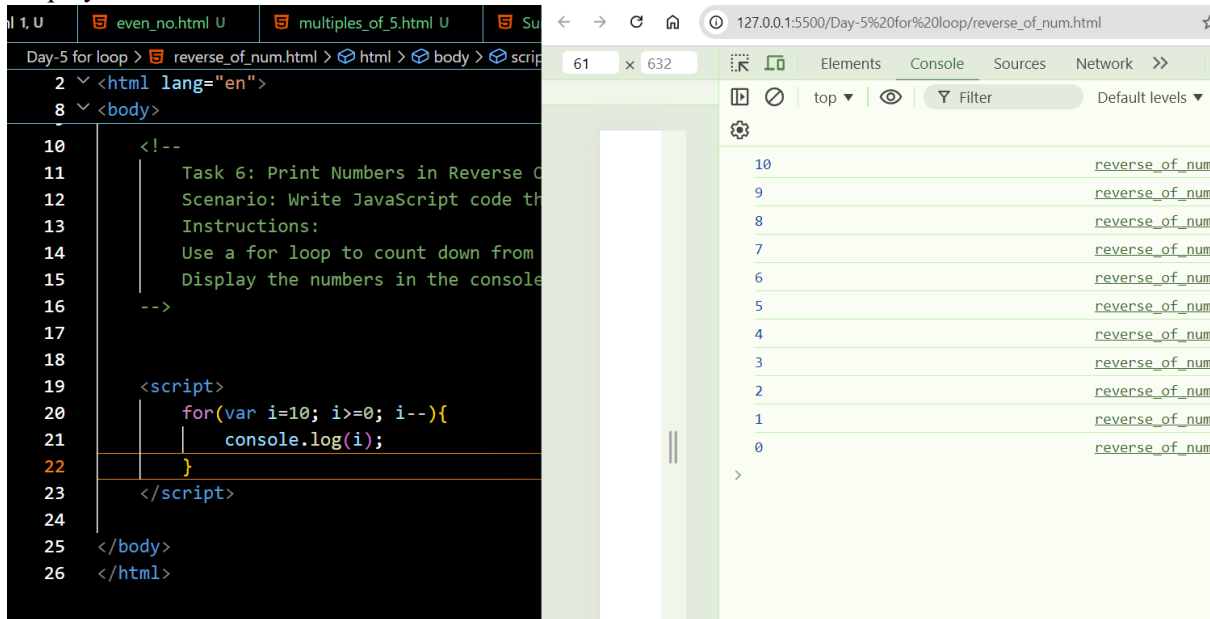
(optional)

Task 7: Print the Alphabet

Scenario: Write JavaScript code that prints the alphabet from A to Z.

Instructions:

Use a for loop to iterate through the ASCII values of the letters A to Z.

Convert the ASCII values to characters and print them.

Hint - console.log(String.fromCharCode(i));

ASCII TABLE

Decimal	Hex	Char	Decimal	Hex	Char	Decimal	Hex	Char	Decimal	Hex	Char
0	0	[NULL]	32	20	[SPACE]	64	40	@	96	60	`
1	1	[START OF HEADING]	33	21	!	65	41	A	97	61	a
2	2	[START OF TEXT]	34	22	"	66	42	B	98	62	b
3	3	[END OF TEXT]	35	23	#	67	43	C	99	63	c
4	4	[END OF TRANSMISSION]	36	24	$	68	44	D	100	64	d
5	5	[ENQUIRY]	37	25	%	69	45	E	101	65	e
6	6	[ACKNOWLEDGE]	38	26	&	70	46	F	102	66	f
7	7	[BELL]	39	27	'	71	47	G	103	67	g
8	8	[BACKSPACE]	40	28	(	72	48	H	104	68	h
9	9	[HORIZONTAL TAB]	41	29	)	73	49	I	105	69	i
10	A	[LINE FEED]	42	2A	*	74	4A	J	106	6A	j
11	B	[VERTICAL TAB]	43	2B	+	75	4B	K	107	6B	k
12	C	[FORM FEED]	44	2C	,	76	4C	L	108	6C	l
13	D	[CARRIAGE RETURN]	45	2D	-	77	4D	M	109	6D	m
14	E	[SHIFT OUT]	46	2E	.	78	4E	N	110	6E	n
15	F	[SHIFT IN]	47	2F	/	79	4F	O	111	6F	o
16	10	[DATA LINK ESCAPE]	48	30	0	80	50	P	112	70	p
17	11	[DEVICE CONTROL 1]	49	31	1	81	51	Q	113	71	q
18	12	[DEVICE CONTROL 2]	50	32	2	82	52	R	114	72	r
19	13	[DEVICE CONTROL 3]	51	33	3	83	53	S	115	73	s
20	14	[DEVICE CONTROL 4]	52	34	4	84	54	T	116	74	t
21	15	[NEGATIVE ACKNOWLEDGE]	53	35	5	85	55	U	117	75	u
22	16	[SYNCHRONOUS IDLE]	54	36	6	86	56	V	118	76	v
23	17	[ENG OF TRANS. BLOCK]	55	37	7	87	57	W	119	77	w
24	18	[CANCEL]	56	38	8	88	58	X	120	78	x
25	19	[END OF MEDIUM]	57	39	9	89	59	Y	121	79	y
26	1A	[SUBSTITUTE]	58	3A	:	90	5A	Z	122	7A	z
27	1B	[ESCAPE]	59	3B	;	91	5B	[	123	7B	{
28	1C	[FILE SEPARATOR]	60	3C	<	92	5C	\	124	7C		
29	1D	[GROUP SEPARATOR]	61	3D	=	93	5D	]	125	7D	}
30	1E	[RECORD SEPARATOR]	62	3E	>	94	5E	^	126	7E	~
31	1F	[UNIT SEPARATOR]	63	3F	?	95	5F	_	127	7F	[DEL]

```html
<html lang="en">
<head>

</head>
<body>
    <!--
    Task 7: Print the Alphabet
    Scenario: Write JavaScript code that prints the alphabet
    Instructions:
    Use a for loop to iterate through the ASCII values of the
    Convert the ASCII values to characters and print them.
    Hint - console.log(String.fromCharCode(i));
    -->


    <script>
        for(var i=65; i<=90;i++)
        console.log(String.fromCharCode(i));
    </script>

</body>
</html>
```

Task 8: Write a JavaScript script that uses nested loops to
print a multiplication table for numbers 1 through 5.
Instructions:
use for loop
use nested loop

```html
 2  <html lang="en">
 8  <body>
12      instructions:
13      use for loop
14      use nested loop
15      -->
16
17
18      <script>
19          for(var i=1; i<=5; i++){
20              console.log("Table "+ i);
21              for(var j=1; j<=10; j++){
22
23                  var x=i*j;
24                  console.log(i+ " * "+j+'='+x);
25
26
27              }
28          }
29      </script>
30
31  </body>
32  </html>
```

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Table 1
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
Table 2
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

```html
<html lang="en">
<body>
    instructions:
    use for loop
    use nested loop
    -->


    <script>
        for(var i=1; i<=5; i++){
            console.log("Table "+ i);
            for(var j=1; j<=10; j++){

                var x=i*j;
                console.log(i+ " * "+j+'='+x);


            }
        }
    </script>

</body>
</html>
```

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2 * 10=20   multipl
Table 3   multipl
3 * 1=3   multipl
3 * 2=6   multipl
3 * 3=9   multipl
3 * 4=12   multipl
3 * 5=15   multipl
3 * 6=18   multipl
3 * 7=21   multipl
3 * 8=24   multipl
3 * 9=27   multipl
3 * 10=30   multipl
Table 4   multipl
4 * 1=4   multipl
4 * 2=8   multipl
4 * 3=12   multipl
4 * 4=16   multipl
4 * 5=20   multipl
4 * 6=24   multipl
4 * 7=28   multipl
4 * 8=32   multipl
4 * 9=36   multipl
4 * 10=40   multipl

```
                console.log(i+ " * "+j+'='+x);


            }
        }
    </script>

</body>
</html>
```

Table 5
5 * 1=5
5 * 2=10
5 * 3=15
5 * 4=20
5 * 5=25
5 * 6=30
5 * 7=35
5 * 8=40
5 * 9=45
5 * 10=50