UDAY SHARMA

Type Conversions in JavaScript

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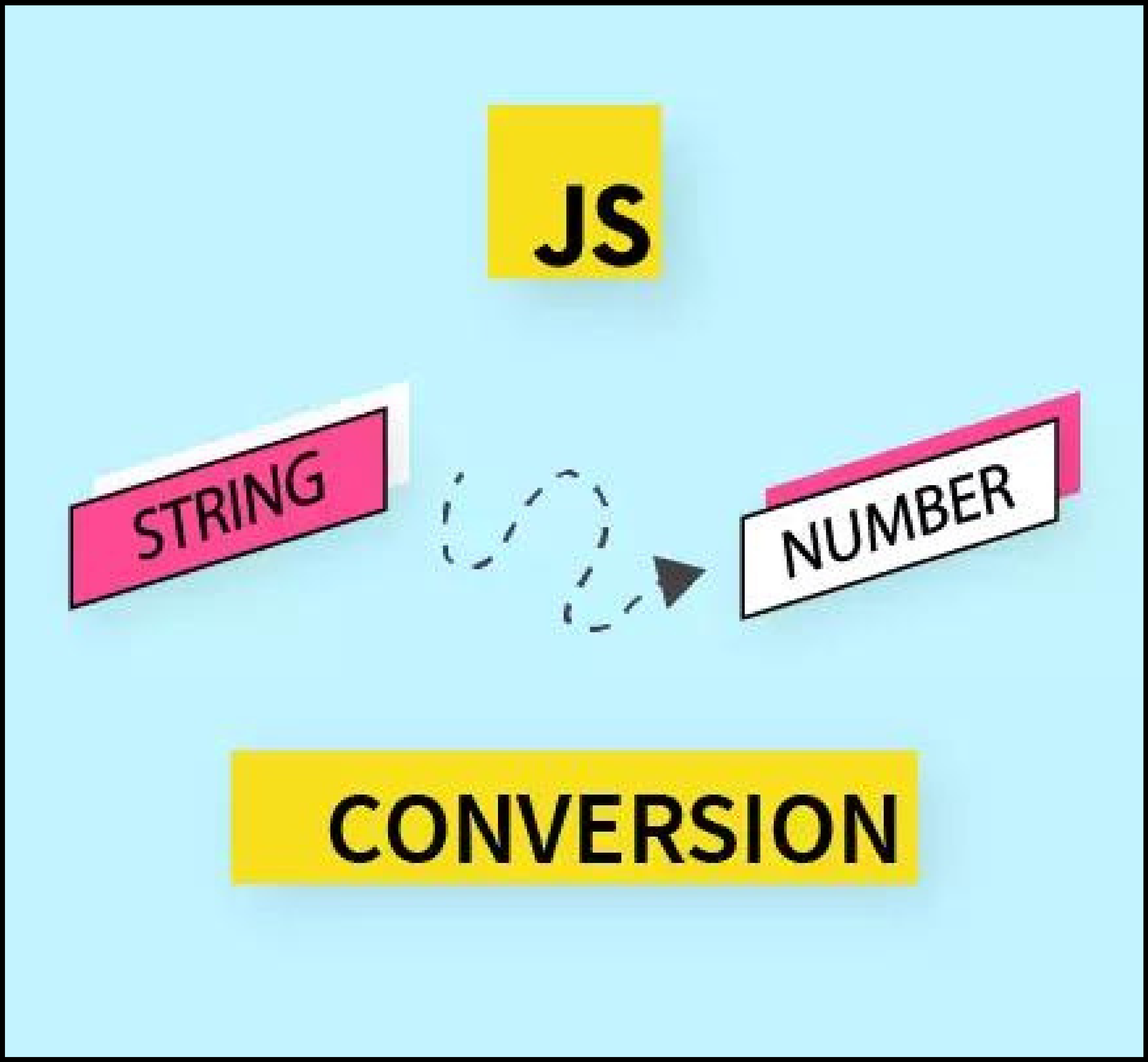
Type Conversions:-

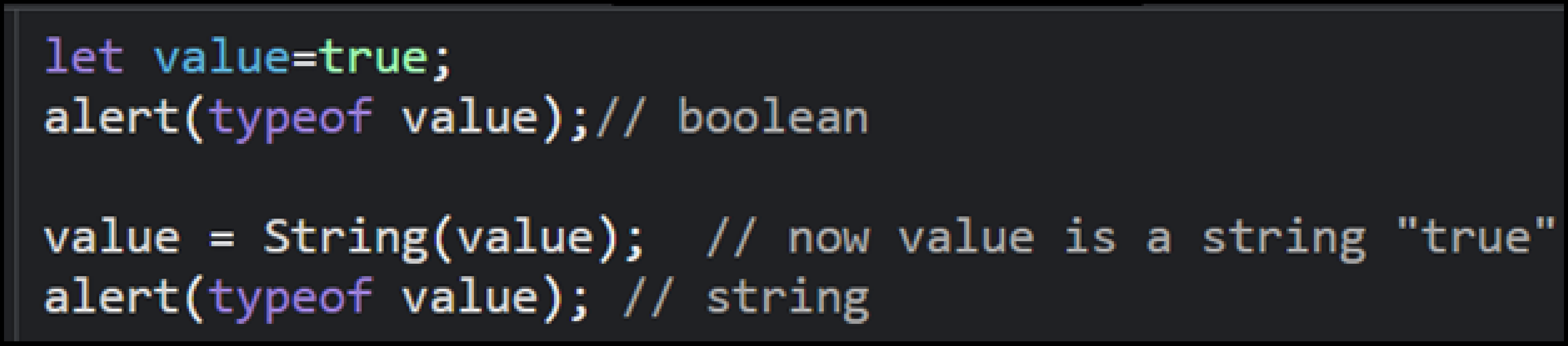
- Most of the time, operators and functions automatically convert the values given to them to the right type.
- For example, alert automatically converts any value to a string to show it. Mathematical operations convert values to numbers.
- There are also cases when we need to explicitly convert a value to the expected type.



String Conversion:-

- String conversion happens when we need the string form of a value.
- For example, alert(value) does it to show the value.
- We can also call the String(value) function to convert a value to a string:

Code :-

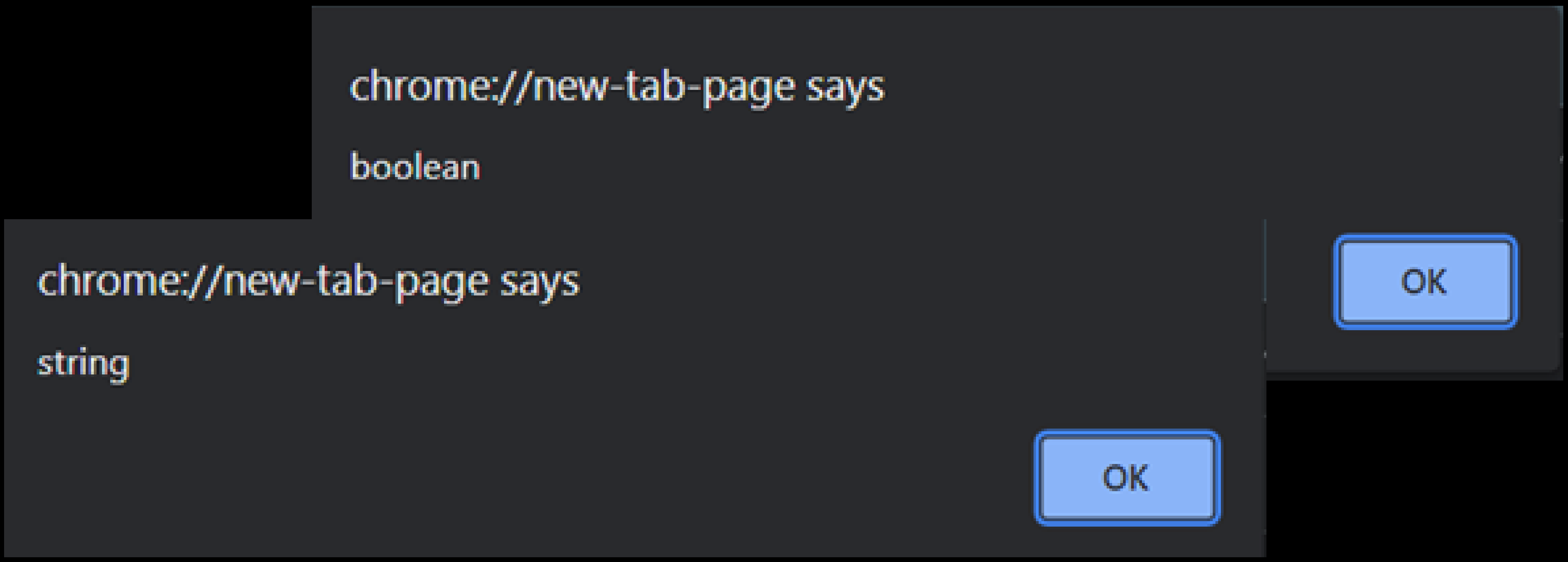


```
let value=true;
alert(typeof value);// boolean

value = String(value);  // now value is a string "true"
alert(typeof value); // string
```

- String conversion is mostly obvious. A false becomes "false", null becomes "null", etc.

output:-



```
chrome://new-tab-page says
boolean
                                        OK

chrome://new-tab-page says
string
                                        OK
```

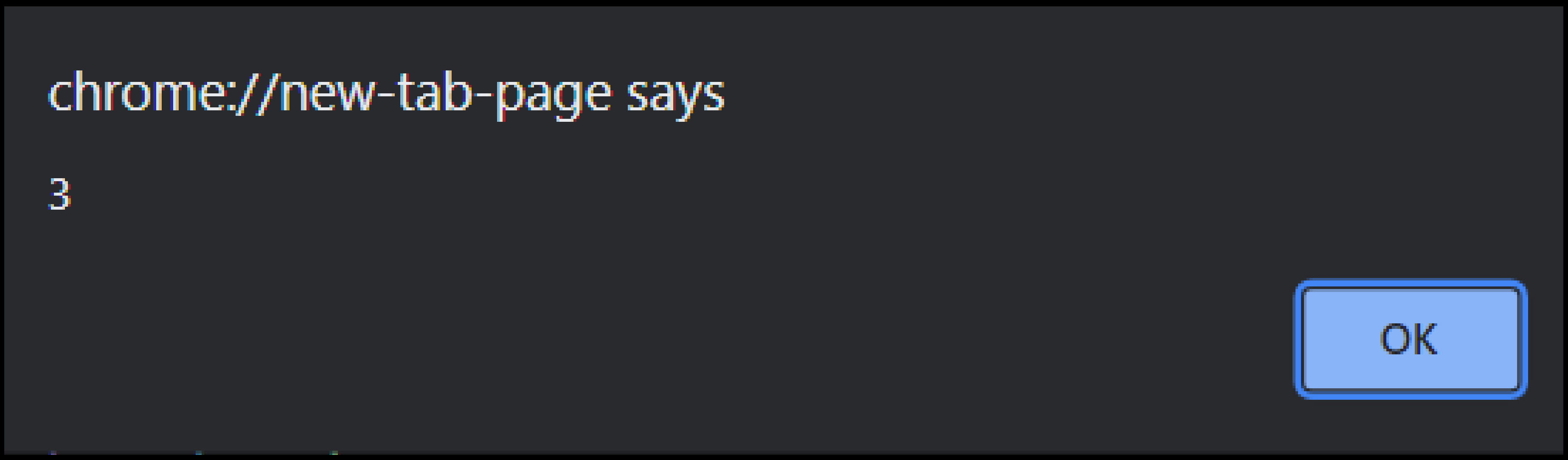
Numeric Conversion:-

- Numeric conversion in mathematical functions and expressions happens automatically.
- For example, when division / is applied to non-numbers:

Code :-

```
alert( "6" / "2" ); // 3, strings are converted to numbers
```

output:-



```
chrome://new-tab-page says

3

OK
```

- We can use the Number(value) function to explicitly convert a value to a number:

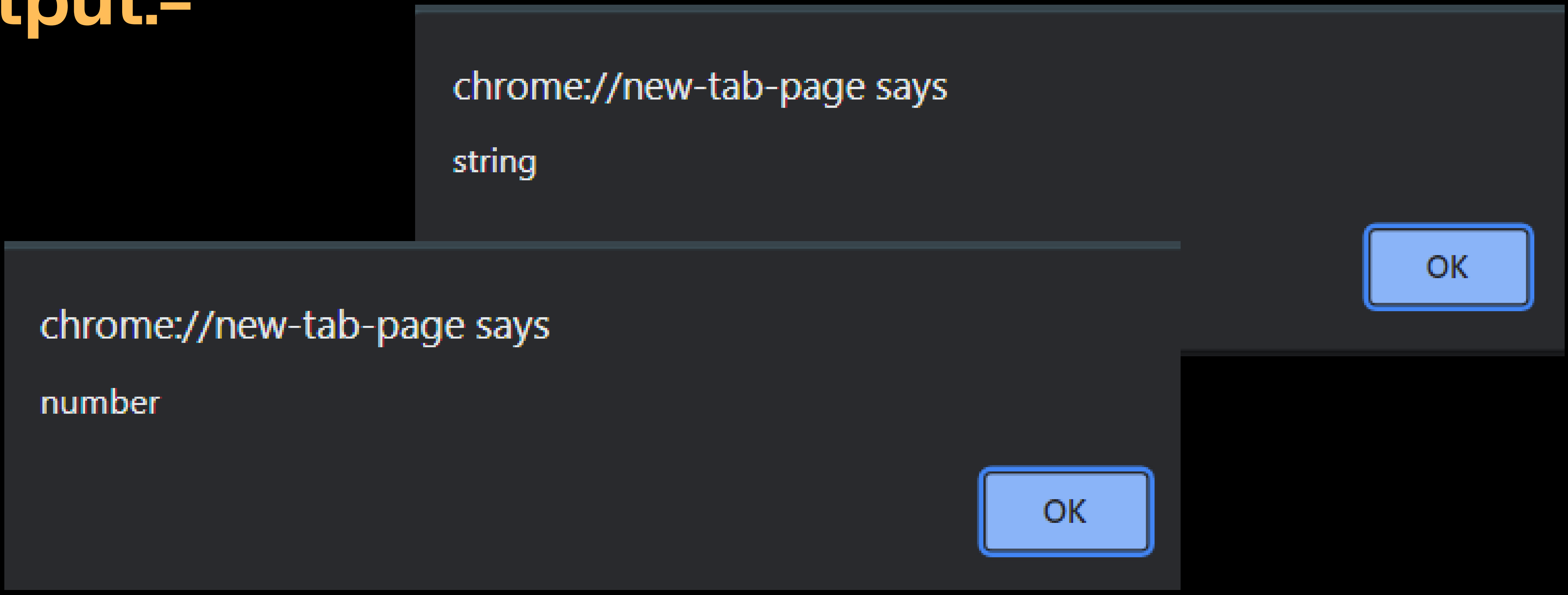
Code :-

```
let str = "123";
alert(typeof str); // string

let num = Number(str); // becomes a number 123

alert(typeof num); // number
```

output:-


```
chrome://new-tab-page says
string
OK
```

```
chrome://new-tab-page says
number
OK
```

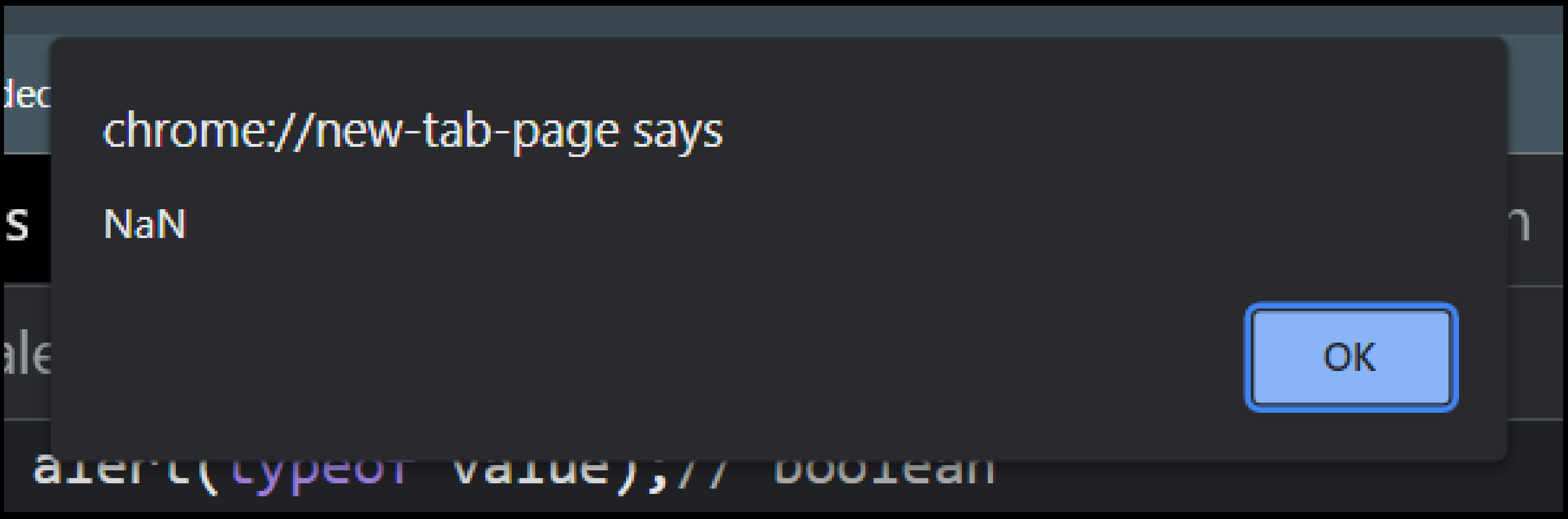
- is usually required when we read a value from a string-based source like a text form but expect a number to be entered.
- If the string is **not a valid number,** the **result of such a conversion** is **NaN.** For instance:

Example-1:-

Code :-

```
let age=Number("What's your age : ");
alert(age);
```

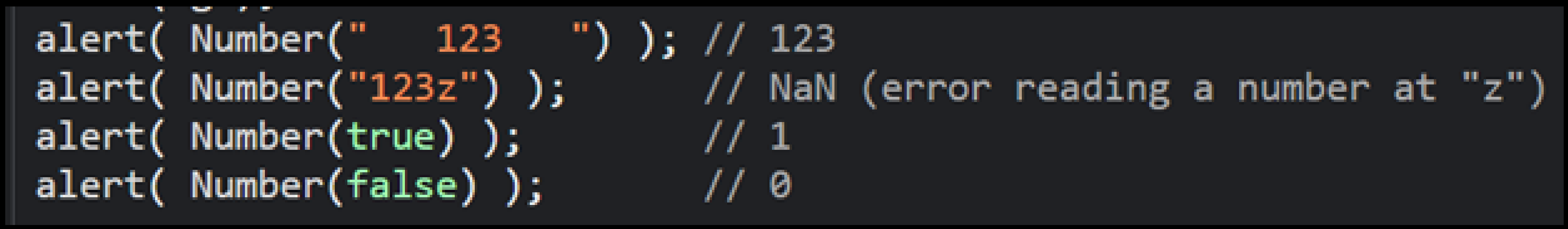
output:-


```
chrome://new-tab-page says
NaN
OK
```

Numeric conversion rules:

Value	Becomes...
undefined	NaN
null	0
true and false	1 and 0
string	Whitespaces (includes spaces, tabs \t, newlines \n etc.) from the start and end are removed. If the remaining string is empty, the result is 0. Otherwise, the number is “read” from the string. An error gives NaN.

Code :-



```
alert( Number("   123   ") ); // 123
alert( Number("123z") );      // NaN (error reading a number at "z")
alert( Number(true) );        // 1
alert( Number(false) );       // 0
```

- Please note that null and undefined behave differently here: null becomes zero while undefined becomes NaN.

Boolean Conversion :-

- Boolean conversion is the simplest one.
- It happens in logical operations (later we'll meet condition tests and other similar things) but can also be performed explicitly with a call to Boolean(value).

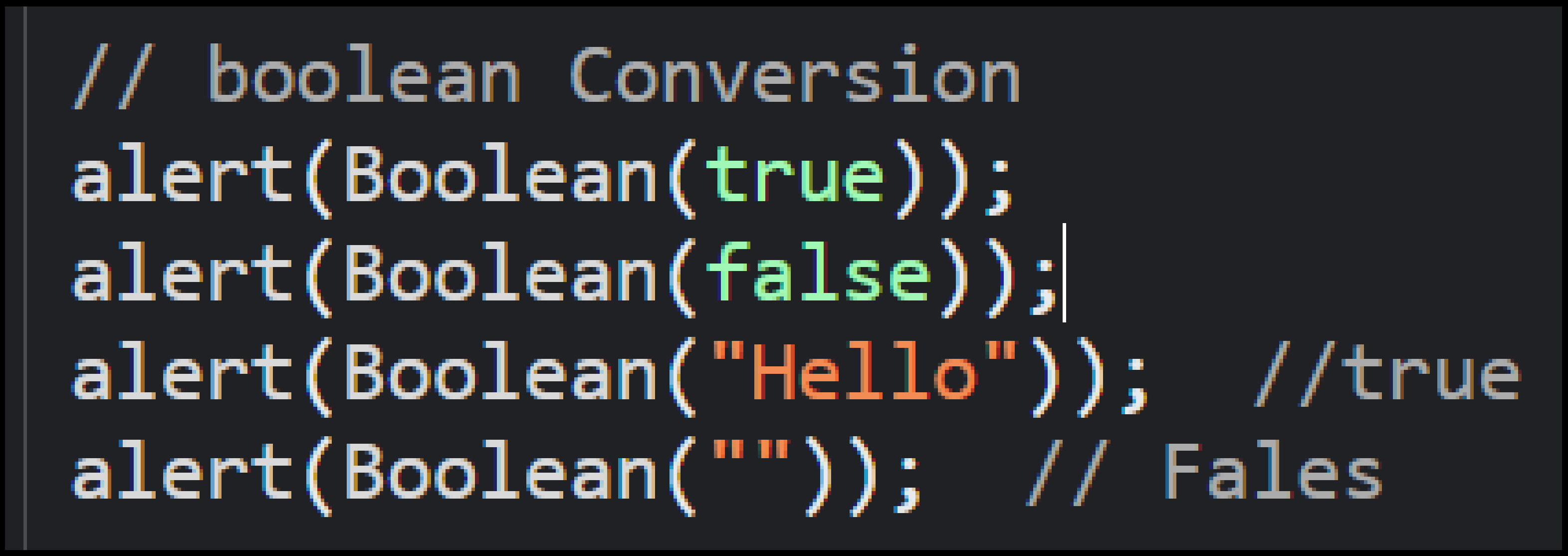
The conversion rule :-

- Values that are intuitively "empty", like 0, an empty string, null, undefined, and NaN, become false.
- Other values become true.
- Boolean Conversion – Occurs in logical operations. Can be performed with Boolean(value).
- Follows the rules:

Value	Becomes...
0, null, undefined, NaN, ""	False
any other value	True

- Most of these rules are easy to understand and memorize. The notable exceptions where people usually make mistakes are:

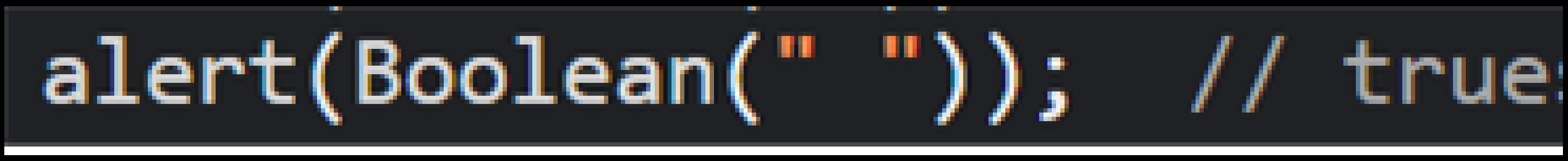
- undefined is NaN as a number, not 0.
- "0" and space-only strings like " " are true as a boolean.



```
// boolean Conversion
alert(Boolean(true));
alert(Boolean(false));
alert(Boolean("Hello"));  //true
alert(Boolean(""));  // Fales
```

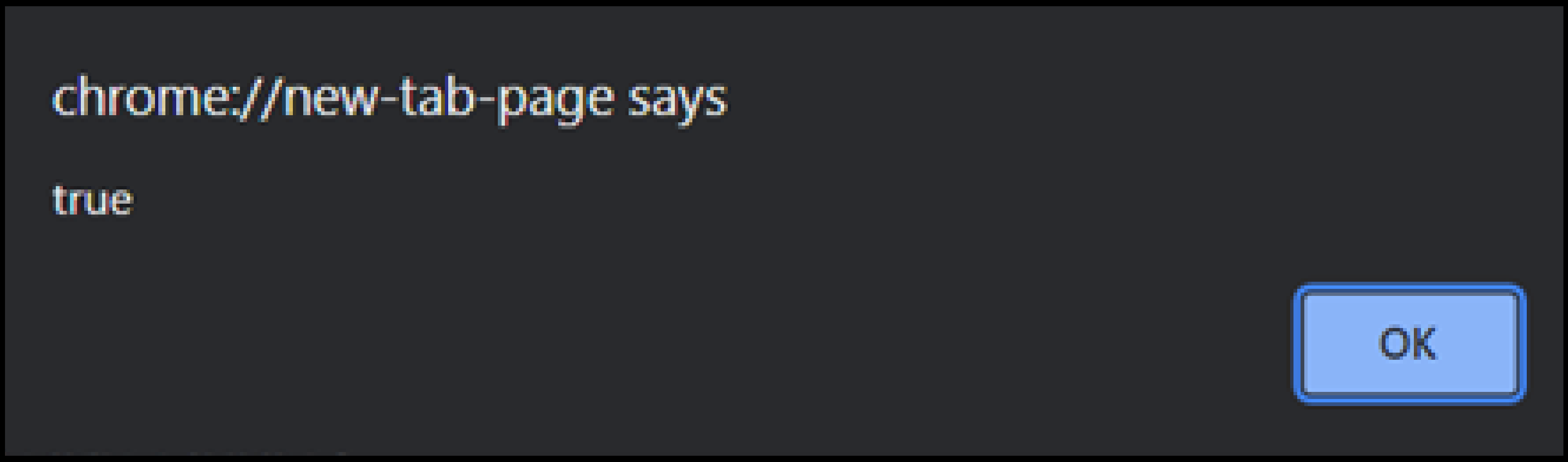
- Please note: the string with zero "0" is true
- Some languages (namely PHP) treat "0" as false. But in JavaScript, a non-empty string is always true

Code :-



```
alert(Boolean(" "));  // true
```

Output :-



```
chrome://new-tab-page says

true
```

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