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May 29, 2021

Code structure

The first thing we'll study is the building blocks of code.

Statements

Statements are syntax constructs and commands that perform actions.

We've already seen a statement, `alert('Hello, world!')`, which shows the message "Hello, world!".

We can have as many statements in our code as we want. Statements can be separated with a semicolon.

For example, here we split "Hello World" into two alerts:

```
1 alert('Hello'); alert('World');
```



Usually, statements are written on separate lines to make the code more readable:

```
1 alert('Hello');
2 alert('World');
```



Semicolons

A semicolon may be omitted in most cases when a line break exists.

This would also work:

```
1 alert('Hello')
2 alert('World')
```



Here, JavaScript interprets the line break as an "implicit" semicolon. This is called an **automatic semicolon insertion**.

In most cases, a newline implies a semicolon. But "in most cases" does not mean "always"!

There are cases when a newline does not mean a semicolon. For example:

```
1 alert(3 +
2 1
3 + 2);
```



The code outputs **6** because JavaScript does not insert semicolons here. It is intuitively obvious that if the line ends with a plus "+" , then it is an "incomplete expression", so a semicolon there would be incorrect. And in this case, that works as intended.

But there are situations where JavaScript "fails" to assume a semicolon where it is really needed.

Errors which occur in such cases are quite hard to find and fix.

1 An example of an error

If you're curious to see a concrete example of such an error, check this code out:

```
1 alert("Hello");
2
3 [1, 2].forEach(alert);
```



No need to think about the meaning of the brackets `[]` and `forEach` yet. We'll study them later. For now, just remember the result of running the code: it shows `Hello`, then `1`, then `2`.

Now let's remove the semicolon after the `alert`:

```
1 alert("Hello")
2
3 [1, 2].forEach(alert);
```



The difference compared to the code above is only one character: the semicolon at the end of the first line is gone.

If we run this code, only the first `Hello` shows (and there's an error, you may need to open the console to see it). There are no numbers any more.

That's because JavaScript does not assume a semicolon before square brackets `[...]`. So, the code in the last example is treated as a single statement.

Here's how the engine sees it:

```
1 alert("Hello")[1, 2].forEach(alert);
```



Looks weird, right? Such merging in this case is just wrong. We need to put a semicolon after `alert` for the code to work correctly.

This can happen in other situations also.

We recommend putting semicolons between statements even if they are separated by newlines. This rule is widely adopted by the community. Let's note once again – *it is possible* to leave out semicolons most of the time. But it's safer – especially for a beginner – to use them.

Comments

As time goes on, programs become more and more complex. It becomes necessary to add *comments* which describe what the code does and why.

Comments can be put into any place of a script. They don't affect its execution because the engine simply ignores them.

One-line comments start with two forward slash characters `//`.

The rest of the line is a comment. It may occupy a full line of its own or follow a statement.

Like here:

```
1 // This comment occupies a line of its own
2 alert('Hello');
3
4 alert('World'); // This comment follows the statement
```



Multiline comments start with a forward slash and an asterisk `/*` and end with an asterisk and a forward slash `*/`.

Like this:

```
1 /* An example with two messages.
2 This is a multiline comment.
3 */
4 alert('Hello');
5 alert('World');
```



The content of comments is ignored, so if we put code inside `/* ... */`, it won't execute.

Sometimes it can be handy to temporarily disable a part of code:

```
1 /* Commenting out the code
2 alert('Hello');
```



```
3  */
4  alert('World');
```

Use hotkeys!

In most editors, a line of code can be commented out by pressing the `Ctrl+{/}` hotkey for a single-line comment and something like `Ctrl+Shift+{/}` – for multiline comments (select a piece of code and press the hotkey). For Mac, try `Cmd` instead of `Ctrl` and `Option` instead of `Shift`.

Nested comments are not supported!

There may not be `/*...*/` inside another `/*...*/`.

Such code will die with an error:

```
1  /*
2   * nested comment ?!?
3  */
4  alert( 'World' );
```



Please, don't hesitate to comment your code.

Comments increase the overall code footprint, but that's not a problem at all. There are many tools which minify code before publishing to a production server. They remove comments, so they don't appear in the working scripts. Therefore, comments do not have negative effects on production at all.

Later in the tutorial there will be a chapter [Code quality](#) that also explains how to write better comments.



Previous lesson



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Comments

- If you have suggestions what to improve - please [submit a GitHub issue](#) or a pull request instead of commenting.
- If you can't understand something in the article – please elaborate.
- To insert few words of code, use the `<code>` tag, for several lines – wrap them in `<pre>` tag, for more than 10 lines – use a sandbox ([plnkr](#), [jsbin](#), [codepen...](#))

Should governments regulate the use of AI in political campaigns?

Choose one

Yes, they should regulate

No, they should not regulate

Only for certain types of campaigns

214 votes

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78

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Best Newest Oldest**Damien Herbert**

6 years ago

As someone who learned to code in c and c++ this optional semicolon businesses is heresy.

102

3

Reply

**Juan Pablo Tupper**

6 years ago

I'm no expert but I tend to agree on this. This ambiguous use of semicolon, together with other unstrict things from JS can make the code difficult to read and lead to bad practices. JS is great, but is a programming language, not poetry so I believe its syntax should be more strict.

33

1

Reply

S**Sreeharsha Vanamali**

→ Juan Pablo Tupper

6 years ago

Agree, these create more issues in the code and are hard to catch. It is always better to have a strict syntax.

12

0

Reply

**sam barr**

→ Sreeharsha Vanamali

6 years ago

They all have their pros and cons to be honest, Python for instance annoys me with its indentation system.

18

3

Reply

**Andrew Smith**

→ sam barr

6 years ago

This isn't really the same issue. Ambiguous behaviour of a lack of a semicolon is not the same as as a language using indents over braces to specify blocks.

19

1

Reply

**sam barr**

→ Andrew Smith

6 years ago

Please try and understand, I wasn't in any way form or shape saying that it is the same thing.

But unless someone gets used to that particular language they will face a lot of headaches when they first start, I am speaking from experience.

Sometimes a semicolon can cause you a lot of headaches if your coding style is messy. Although modern languages tend to point out where the error might be or near to where it is, but sometimes you get a misleading error message.

If you're a programmer you know what I am talking about so no need in explaining what most professionals know.

2

1

Reply

**Tabish Mir**

→ sam barr

5 years ago

I personally believe that the indentation system, although a little less intuitive for beginners, is a great way to learn how to write clean, readable code. Once you get used to the indentation system, you carry those rules to whatever language you program in. The next concern after code correctness has to be good readability and the indentation system takes care of that

1

0

Reply

**Julian Cook**

→ Tabish Mir

4 years ago

Code structure

I started in Perl and now code Python. Readability is under rated. Love Python's indenting.

3 0 Reply

A

ath0rus → sam barr

5 years ago edited

when you get the hang of python's indentation system it is a little easier to work with (but still not the best)

0 0 Reply



Amit Saroj → Sreeharsha Vanamali

6 years ago

I agree with that.

2 0 Reply

SS

sathprem sital → Sreeharsha Vanamali

5 years ago

i just always use semicolon's so there will never be a problem :P

1 0 Reply



Stacey Wilson → Damien Herbert

5 years ago

There's always reasons to complain, but why would you. Just add the semi-colon where it belongs. Other people will forget and you will look like a hero when you fix it... LOL

3 0 Reply



Ryan → Damien Herbert

5 years ago

I agree cuz I did CSS. I am now used to these semicolons and they are fine. Just an additional character (in most cases).

2 0 Reply



charon → Damien Herbert

3 years ago

same. I used C++ for competitive programming

1 0 Reply

B

Baikova Maria → Damien Herbert

4 years ago

absolutely

1 0 Reply



Dragoneer → Damien Herbert

4 years ago

I only did 2 semesters of C++ in uni, and a voice in my head immediately said "This is madness."

0 0 Reply

M

Man

6 years ago

Excellent teaching style --the old fashioned way -- very structured and clean. Keep up the good work!

25 0 Reply

V

valhalla

3 years ago

For all the new comers here , like me , just wanna say we've got this don't give up .Quote of the day
alert("Progress is progress no matter how small it is") ; //taken from FreeCodecCamp

5 0 Reply



Obiagba Mary Ifeoma

6 years ago

About comments, it's possible to have nested comments. I use it a lot.

By adding a backslash (\) in between the (*) symbol and the (/) symbol in this manner:

```
/*
/* nested comment */\n*/
```

More:

```
/*
/* nested comment 1 */
/* nested comment 2*/
*/
```

Written on different lines for easy reading 😊

8 1 Reply



Tom Sherlock

→ Obiagba Mary Ifeoma

6 years ago

— 🔍

Seriously, what's the point of nested comments?

16 1 Reply



AltairIV

→ Tom Sherlock

6 years ago

— 🔍

Nesting would allow you to comment out a block of code that is already commented, for one thing. I've had to deal with that headache in CSS on occasion.

But AFAICT, this isn't really nesting. It's just breaking the inner end-comments so that the parser doesn't recognize them.

5 0 Reply



Carl Hopkinson

→ Tom Sherlock

4 years ago

— 🔍

Think about it for like 2 seconds.

0 0 Reply



SomeGuy

→ Obiagba Mary Ifeoma

5 years ago

— 🔍

if you want nesting comment this would work

```
/***
 * Nested comment 1
 * Nested Comment 2
 *
 */
```

0 0 Reply



AltairIV

→ SomeGuy

5 years ago

— 🔍

That's not a nested comment either, though. That's just a single regular comment with * at the start of each line, which are ignored just like the rest of the text.

As stated repeatedly, there is simply *no* nesting of comments in this language. Whenever the parser sees /* it just ignores everything after it up to the next occurrence of */ (and for // it's everything up to the next newline character). That is all it does.

In a pattern like

```
/*
outer comment 1

/* inner comment */
outer comment 2

*/
```

...the inner /* is ignored. and the first */ is treated as the end of the comment. so what the

see more

1 0 Reply



MD. Omar Faruq

→ SomeGuy

3 years ago

— 🔍

yes ,its work ...

0 0 Reply



Ilesanmi Kashimawo Jnr

→ Obiagba Mary Ifeoma

5 years ago

— 🔍

LOI....

Actually, nobody is an island 😊😊..

I will love to try yours

0 1 Reply ↗

**Abdul Rehman Khan**

2 years ago edited

Its Shift + ALT + A for multiline comment with staric /* */ in VS CODE

3 0 Reply ↗

**Tamimul Islam**

2 years ago

Thanks brother.

0 0 Reply ↗

**L.R Luis**

→ Abdul Rehman Khan

2 years ago

Thanks for this, didn't have to google.

0 0 Reply ↗

**D4David**

a month ago

yooooo fellas i just started my journey to dive into js, what are the things i need to know?

1 0 Reply ↗

**Abimbola Salami**

2 months ago

wow this is amazing and easy to understand...

1 0 Reply ↗

**SCIENTIST**

8 months ago

LET SEE IF I CAN BECOME SOFTWARE ENGINEER IN 5 YEARS TIME

1 0 Reply ↗

**Mehmod Wattoo**

9 months ago

ctrl+shift+/ is not working in my vs code? why?

1 0 Reply ↗

**Tamara daniel**

→ Mehmod Wattoo

9 months ago

hi just stated javascript , wanna learn together

1 0 Reply ↗

**Aise Kurosu**

→ Tamara daniel

9 months ago

hey bro. let's learn together

0 0 Reply ↗

**Soubhagya bhoi**

→ Aise Kurosu

4 months ago

can I join you guys?

0 0 Reply ↗

**DHUMISANI MSISKA**

a year ago

done!

13 Jan...

1 0 Reply ↗

**Tamara daniel**

→ DHUMISANI MSISKA

9 months ago

you are done with the course?

0 0 Reply ↗

**Tarak**

a year ago

Semicolon becomes evil sometime.

1 0 Reply

**loneWolf**

2 years ago

Completed Code Structure

1 0 Reply

**Waleed Ur Rehman**

3 years ago

hot key not working for me for comment

1 0 Reply

V

valhalla → Waleed Ur Rehman

3 years ago

can you elaborate please .

0 0 Reply

**Waleed Ur Rehman**

→ valhalla

3 years ago

in vs editor i hava script js file when we select all and press ctrl +shift +/ it not working for
multipal commint
and aslo for sing le ctrl +/

1 0 Reply

P**Prefna V**

→ Waleed Ur Rehman

2 years ago

Try to check if you did not change mistakenly change the language of your
keyboard, 'cause in VS Code ctrl + / works for a single line and for multi lines of the
selected code.

0 0 Reply

**EM Selim Ahmed**

→ Waleed Ur Rehman

3 years ago

For block comment on VSCode or GitHub CodeSapce is:- Shift + Alt + A

0 0 Reply

**loneWolf**

3 years ago

Day 1: [Completed]

1 0 Reply

**Atauā Doederlein**

3 years ago

/* this is a comment */

1 0 Reply

W**West**

→ Atauā Doederlein

3 years ago

/* this is another comment*/

1 0 Reply

**mohamed essam**

→ Atauā Doederlein

2 years ago

Nice

0 0 Reply

**Dân Nguyễn**

3 years ago

Fantastic

1 0 Reply

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