JavaScript Variables

What is a **variable**?

A **variable** is a **container** for different types of data.

(it’s a good name because the data stored can change or vary)

variables pair:
a **storage location** with a **symbolic name**

variables hold:

a **known** or **unknown**

quantity, **information**, or **value**

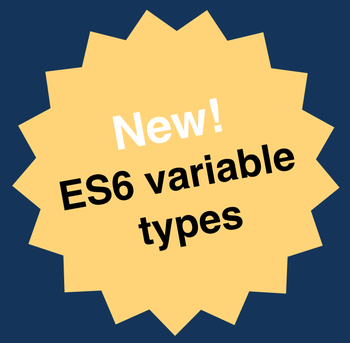
variables need:

a **clear**, **descriptive** name

(the separation of name and value allows them to be used independently)

variables are declared as:

```
var age = 20;
```




```
1  var name = ‘Mark’;
2
3  let name = ‘Meredith’;
4
5  const div = getElementById(’message’);
```

variable **actions**:
can be **accessed** at any time

variable **actions**:
can be **changed** at any time
(except for const*)*

What is **scope**?

Different types of **variables** have different **scope**

(where they can be accessed in the code)

a **local** variable :

declared **in a function** and can only be called **within** that function

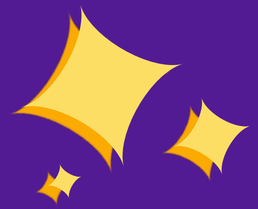
(it is invisible outside that function, think of it like a locker)

a **global** variable :

declared **outside a function** and can only be accessed by **all** functions

```
1  var object = {
2    name: ‘Jaden Smith’,
3    age: 24
4  };
5  object.name = ‘Will Smith’;
```

If a variable is **declared in an object**,
it can be **accessed via the object**.



Let’s look at an example

How do you **remove** a variable?
Mark it for **garbage collection!**

```
1  var penny = 1;
2  penny = null;
3  penny = undefined;
```

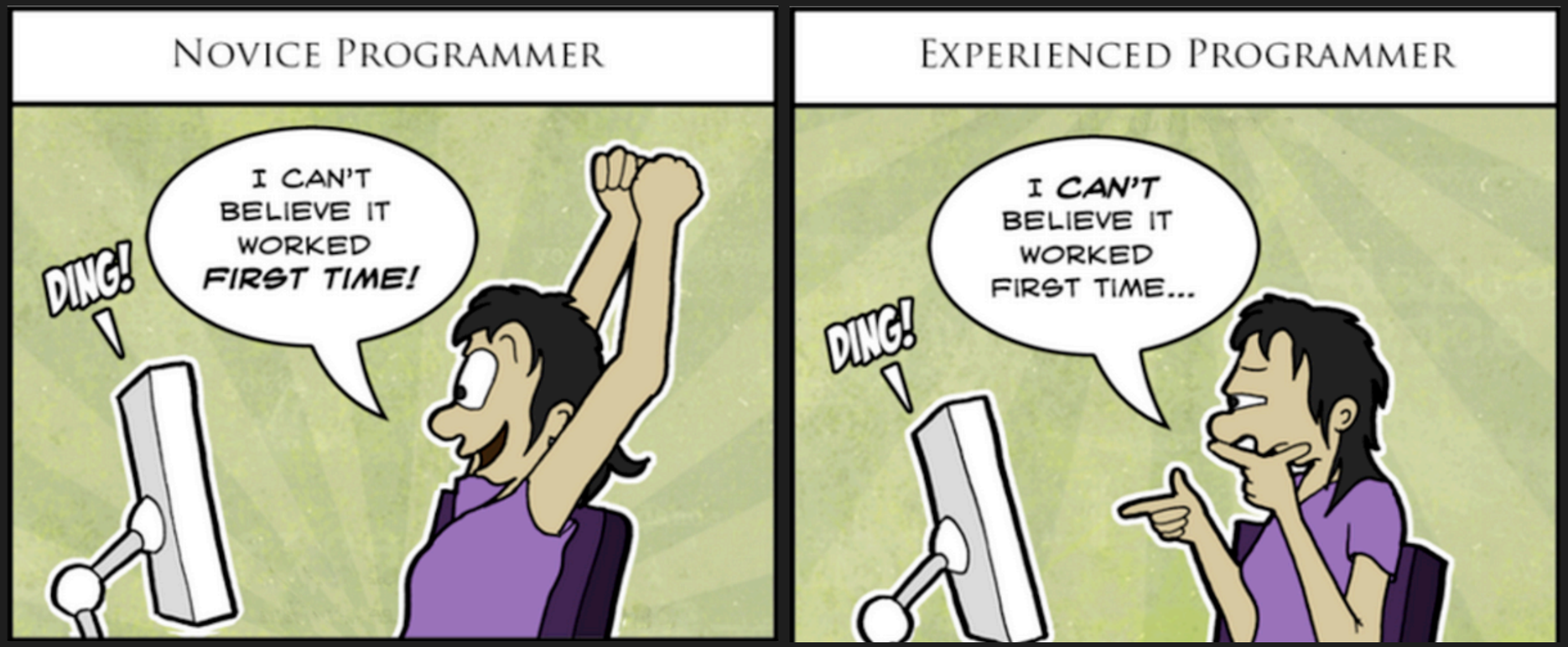
Variable **names**

When a **variable** is declared
memory is allocated to that variable

When naming a **variable** most languages are **case sensitive**:

Dog *will not reference* dog

(Be careful! 90% of code errors are caused by a spelling mistake)


Novice Programmer
DING!
I CAN'T BELIEVE IT WORKED FIRST TIME!
Experienced Programmer
DING!
I CAN'T BELIEVE IT WORKED FIRST TIME...

Many programmers use **conventions** when writing code.

```
1  // This is an object because it starts with a capital letter
2  var Dog = {};
3
4  // This is a variable because it starts with a lower case
5  var dog = ‘fido’;
```

Sometimes you need to check a variable is **carrying** a certain value.

```
1  var a;
2  console.log('The value of a is ' + a);
3  // logs "The value of a is undefined"
4
5  console.log('The value of b is ' + b);
6  // throws ReferenceError exception
```

Rules for naming **variables**

Do This	Not This
name should begin with **letter**, **dollar sign**, or **underscore**	Name **cannot begin with a number**
Name can contain **letters**, **numbers**, **dollar sign,** or **underscore**	Name **cannot** contain a **dash** or **period**
Make a name that **describes the information contained**, e.g. firstName	Do not use **keywords**, e.g. **var**, **function**, or anything else already used by JS
Use **camel case** for two words, e.g. firstName	**Do not use spaces** in names, e.g. first name

Practice Quiz!

```
1  var Enemy;
```

What would the above variable make you think it was? Why?

```
1  var speed = 10;
```

How would you mark the above variable called ‘speed’ for garbage collection?

```
1  var isSunUp = ??;
```

How would you write a boolean variable with a value?

```
1  for ( let i = 0; i < 5; i++;) {
2    console.log(i);
3  }
```

Now, what would the above output in the console?

```
1  for ( let i = 0; i < 5; i++) {
2    console.log(i);
3  }
4  console.log(i);
```

What does line 4 log in the console? Why?