

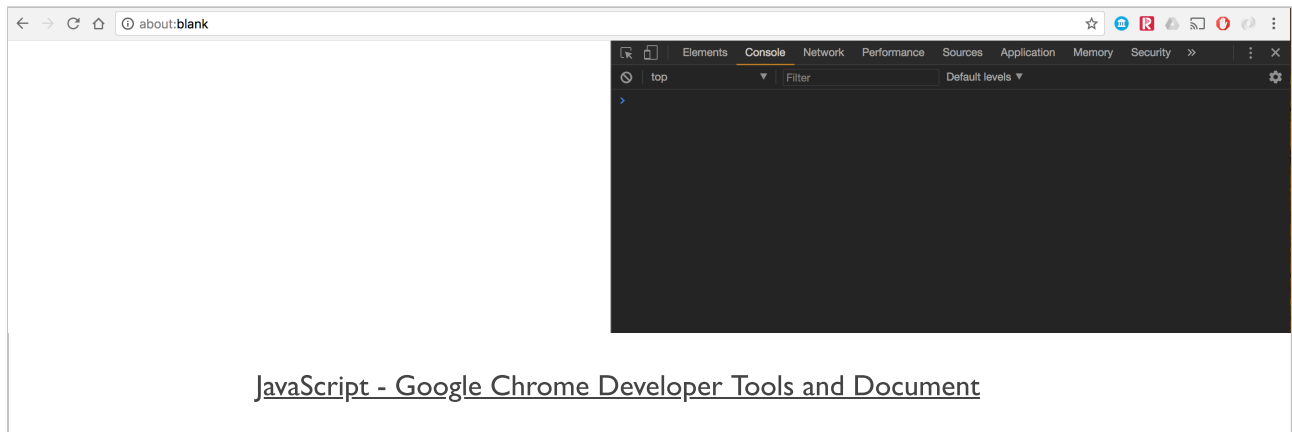
Comp 125 - Visual Information Processing

Spring Semester 2019 - Week 1 - Friday

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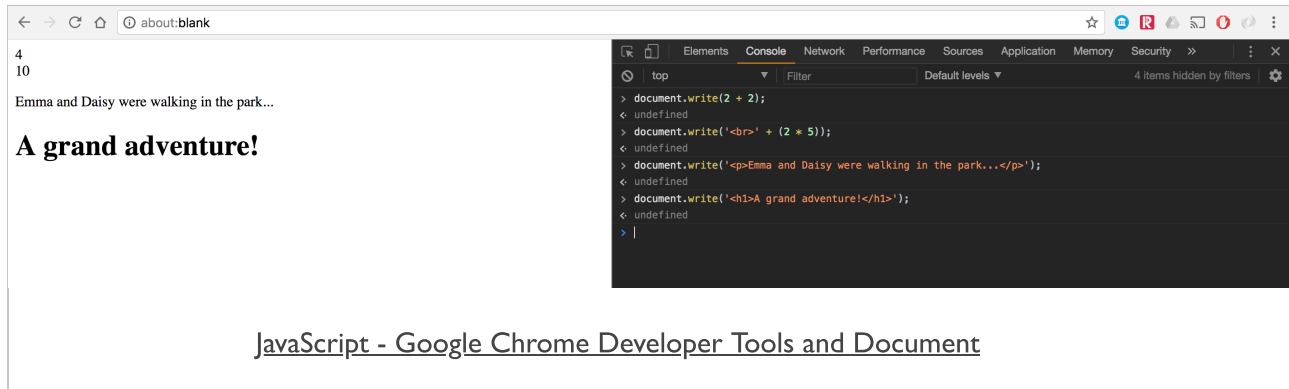
JS Intro - Google Chrome developer tools & Document

Developer tools with blank tab - a **document** we can write to with JavaScript.



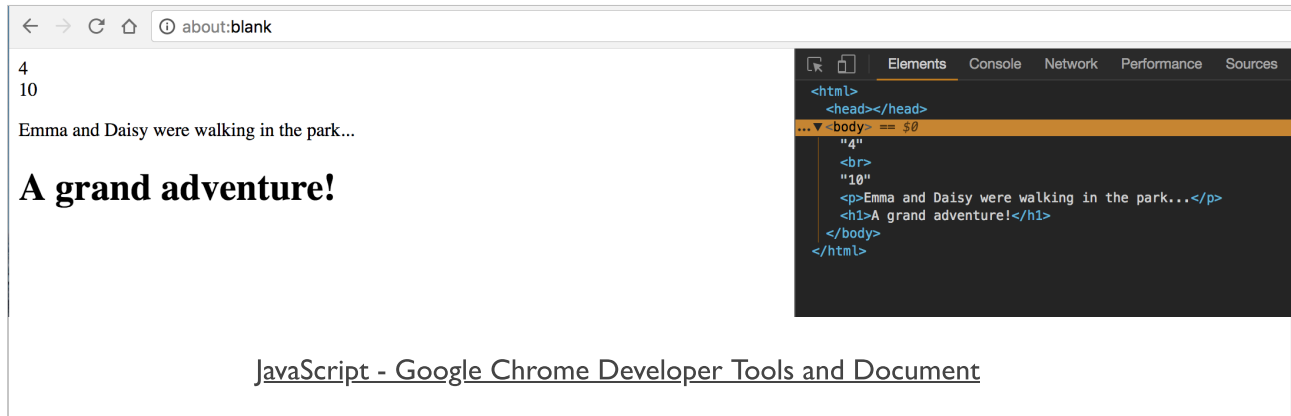
JS Intro - Google Chrome developer tools & Document

Use JavaScript to write to a **document**



JS Intro - Google Chrome developer tools & Document

A HTML **document** we just created



JS Basics - operators

- operators allow us to perform
 - *mathematical calculations*
 - *assign one thing to another*
 - *compare and contrast*
 - ...
- we can perform multiplication
 - `*`
 - e.g.

```
2 * 4
```

- we can also add, subtract, and divide numbers
 - `+`, `-`, `/`
 - e.g.

```
2 + 4
```

```
4 - 2
```

```
4 / 2
```

JS Basics - some common operators - part I

Assign values to variables, perform mathematical calculations, and compare values...

Assignment

- =
- e.g.

```
a = 4;  
b = 4 + 6;
```

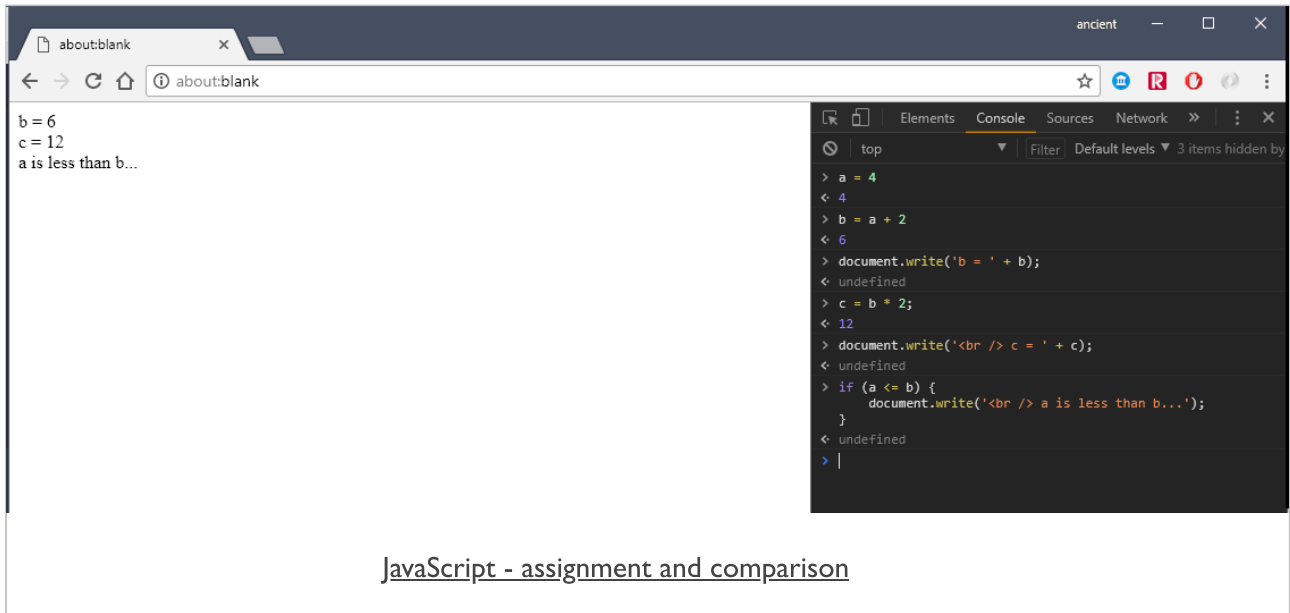
Comparison

- <, > <=, >=
- e.g.

```
a <= b
```

JS Basics - example operator usage

Assign values to variables, perform mathematical calculations, and compare values...



JS Basics - some common operators - part 2

Compound assignment

- `+=`, `-=`, `*=`, `/=`
- compound operators are used to combine a mathematical operation with assignment
- same as `result = result + expression`
 - e.g.

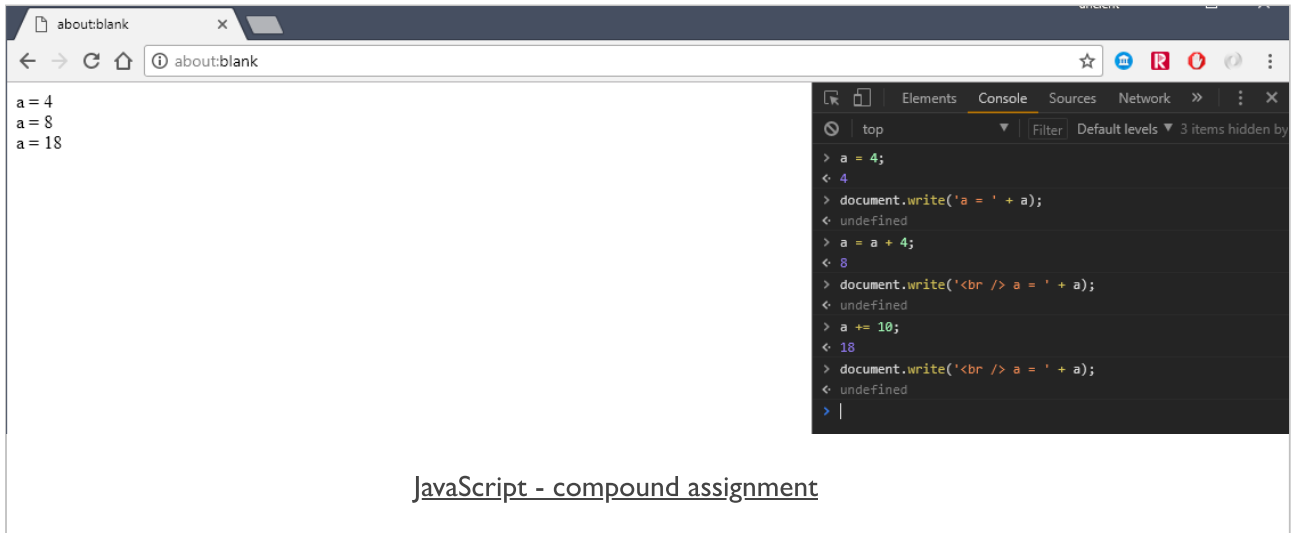
```
a = 4;  
a += 4;
```

is the same as

```
a = 4;  
a = a + 4;
```


JS Basics - example operator usage

Combine a mathematical operation with assignment of value to variable.



The screenshot shows a web browser window with a tab titled 'about:blank'. The address bar also shows 'about:blank'. The main content area displays the following text:

```
a = 4  
a = 8  
a = 18
```

The browser's developer console is open, showing the following code and output:

```
> a = 4;  
< 4  
> document.write('a = ' + a);  
< undefined  
> a = a + 4;  
< 8  
> document.write('<br /> a = ' + a);  
< undefined  
> a += 10;  
< 18  
> document.write('<br /> a = ' + a);  
< undefined  
> |
```

Below the browser window, the text JavaScript - compound assignment is displayed.

JS Basics - some common operators - part 3

Equality

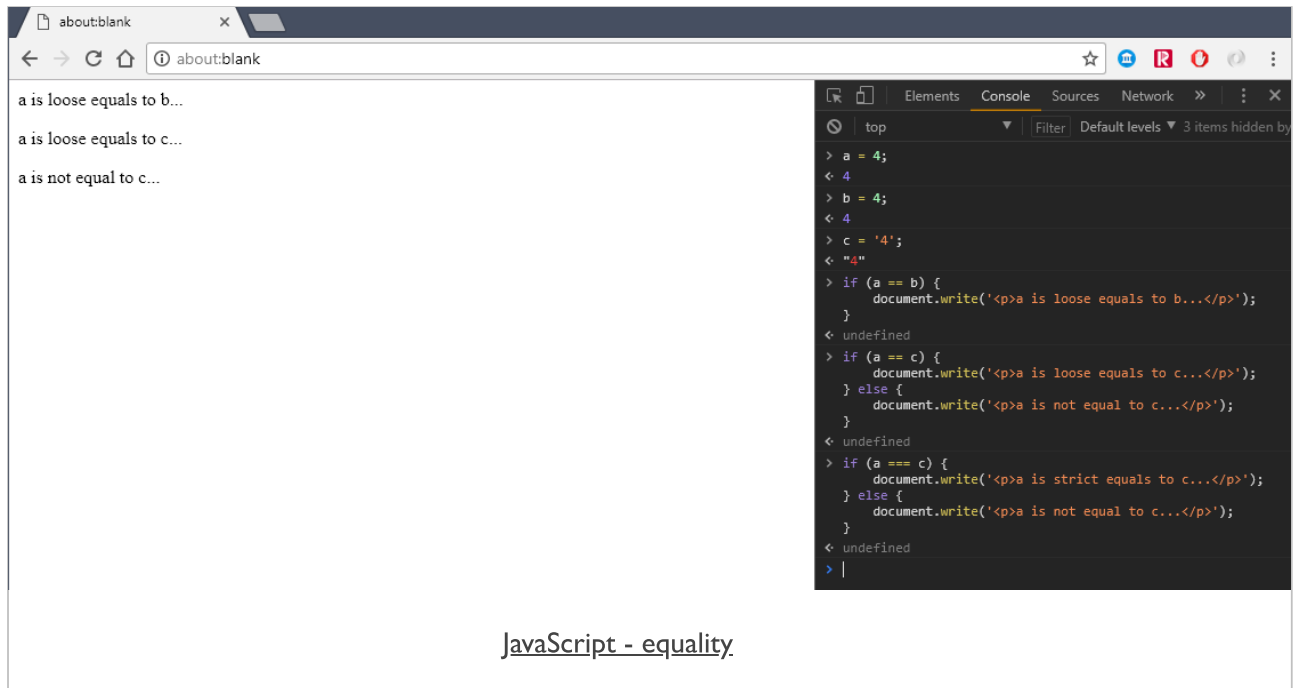
operator	description
==	loose equals
===	strict equals
!=	loose not equals
!==	strict not equals

- e.g.

```
a == b  
a === b
```

JS Basics - example operator usage

Equality options for value, and value and type.



The screenshot shows a web browser window with a blank page. The page content displays the results of three JavaScript equality comparisons: "a is loose equals to b...", "a is loose equals to c...", and "a is not equal to c...". The browser's developer console is open, showing the following code and its execution results:

```
> a = 4;
4
> b = 4;
4
> c = '4';
"4"
> if (a == b) {
  document.write('<p>a is loose equals to b...</p>');
}
undefined
> if (a == c) {
  document.write('<p>a is loose equals to c...</p>');
} else {
  document.write('<p>a is not equal to c...</p>');
}
undefined
> if (a === c) {
  document.write('<p>a is strict equals to c...</p>');
} else {
  document.write('<p>a is not equal to c...</p>');
}
undefined
> |
```

JavaScript - equality.

JS Basics - some common operators - part 4

Logical

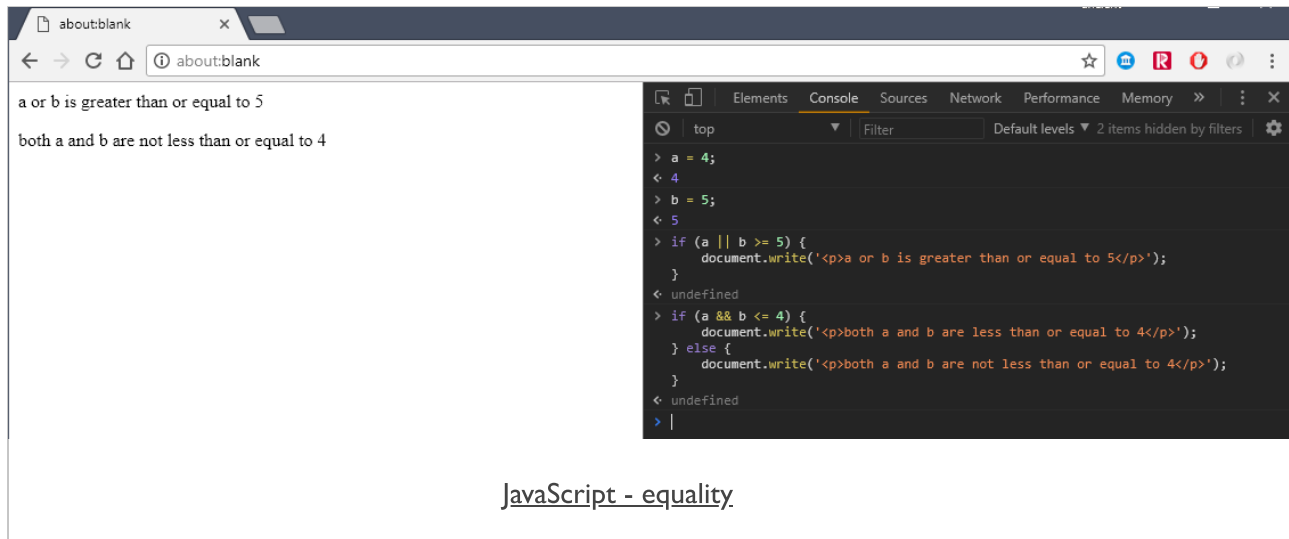
- used to express compound conditionals - **AND, OR**
 - `&&`, `||`
 - e.g. ***a*** or ***b***

```
a || b
```

JS Basics - example operator usage

Check compound conditionals, e.g.

- a **AND** b
- a **OR** b



The screenshot shows a web browser window with the address bar set to 'about:blank'. The main content area displays two lines of text: 'a or b is greater than or equal to 5' and 'both a and b are not less than or equal to 4'. To the right, the browser's developer console is open, showing the following JavaScript code:

```
> a = 4;  
< 4  
> b = 5;  
< 5  
> if (a || b >= 5) {  
    document.write('<p>a or b is greater than or equal to 5</p>');  
}  
< undefined  
> if (a && b <= 4) {  
    document.write('<p>both a and b are less than or equal to 4</p>');  
} else {  
    document.write('<p>both a and b are not less than or equal to 4</p>');  
}  
< undefined  
> |
```

Below the console, the text 'JavaScript - equality.' is displayed.

JS Basics - values and types

- able to express different representations of values
 - *often based upon need or intention*
 - known as **types**
- JS has built-in types
 - allow us to represent **primitive** values
 - e.g. **numbers, strings, booleans**
 - **n.b.** boolean is either **TRUE** or **FALSE**
- such values in the source code are simply known as **literals**
- **literals** can be represented as follows,
 - *string literals use double or single quotes*
 - e.g. *"some text"* or *'some more text'*
 - *numbers and booleans are represented without being escaped*
 - e.g. *49, TRUE*
- also consider arrays, objects, functions...

JS Basics - type conversion

- option and ability to convert types in JS
 - *in effect, **coerce** our values and types from one type to another*
- convert a number, or coerce it, to a string
- built-in JS function, `Number ()`, is an explicit coercion
 - *explicit coercion, convert any type to a number type*
- implicit coercion, JS will often perform as part of a comparison

```
"49" == 49
```

- JS implicitly coerces left string to a matching number
 - *then performs the comparison*
- often considered bad practice
 - *convert first, and then compare*
- implicit coercion still follows rules
 - *can be very useful*