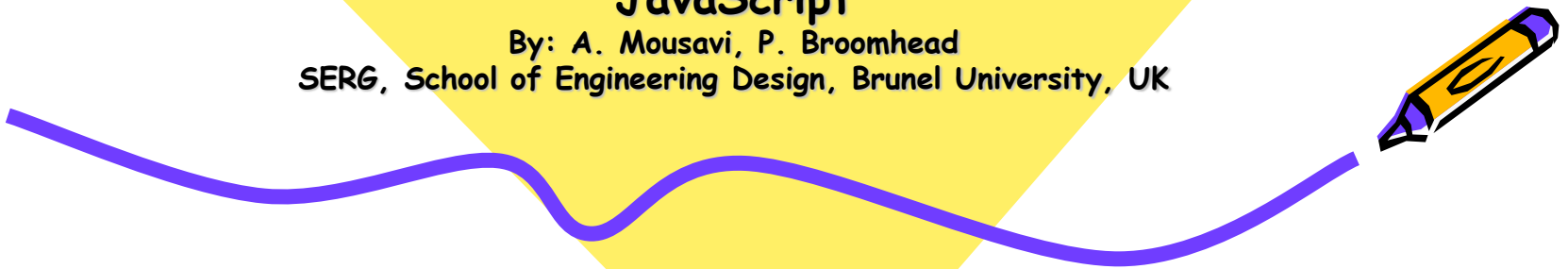# Programming for Digital Media EE1707
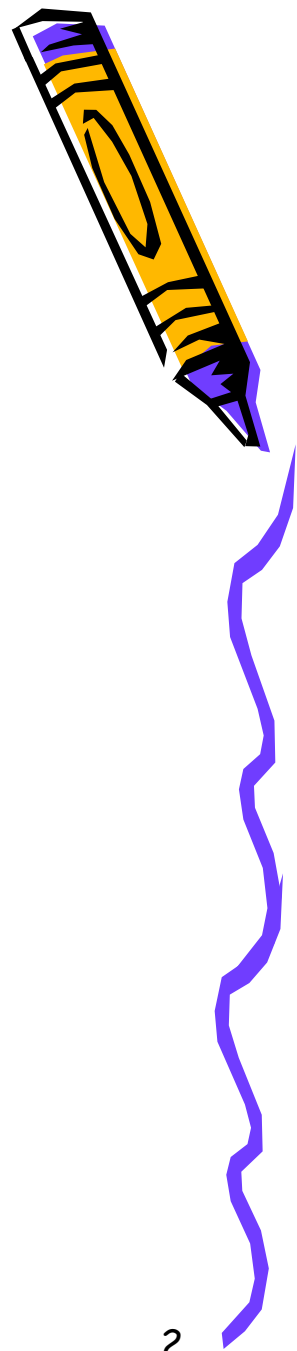
Lecture 2
JavaScript
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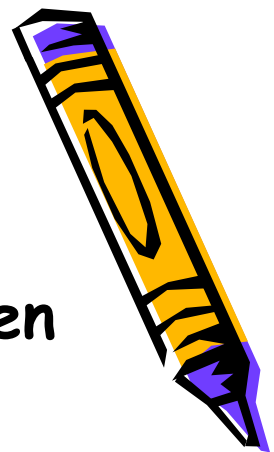
JavaScript Syntax

1. **Statements**

2. **Variables and arrays**

3. **Operators**

4. **Conditional and looping statements**

5. **Functions and objects**

Note that...

- **JavaScript source code is ASCII text and needs to be executed from a document written in (X)HTML – Case Sensitive**

- **Can be written using any text editor**

- **Programming languages are either compiled (e.g. Java, C, C++,…) or interpreted (JavaScript, VBScript)**

- **Interpreted languages do not need compilers. In case of JavaScript the browser does the interpreting**

Note that Continued...

- **JavaScript ignores spaces, tabs and newlines provided that they are not in middle of variables, keywords etc. (syntax)**

- **As a good practice use spaces, newlines and tabs to make your code neater**
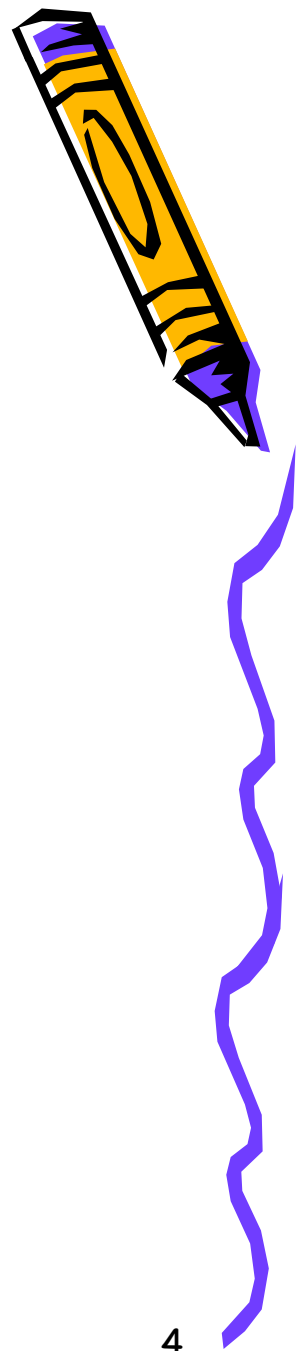
JavaScript Statements

- **Statements are a series of instructions and are the building block of an script**

- **Statements can be separated by writing them in a new line or by semi colons:**
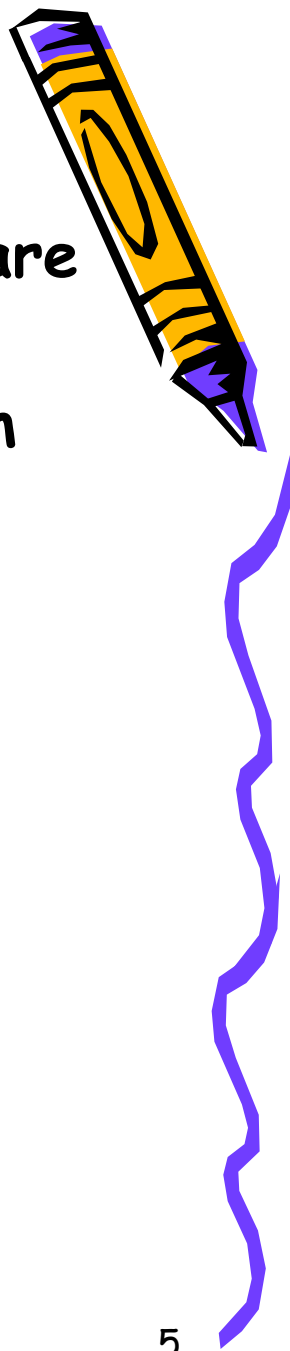
statement 1

statement 2

Or:

statement1; statement2;

Good Practice:

statement1;

statement2;

JavaScript Comments

- **Good/Professional programmers always use comments in their code**
    - Allows for following the thoughts and approach
    - Makes reading the code easier
    - Allows the programmer and other programmers to improve, update and change the code efficiently

    // A line Comment

    */ * Multiple line Comments*
    using slash asterisk
    *… */*

<! Opening and closing single line comment ->
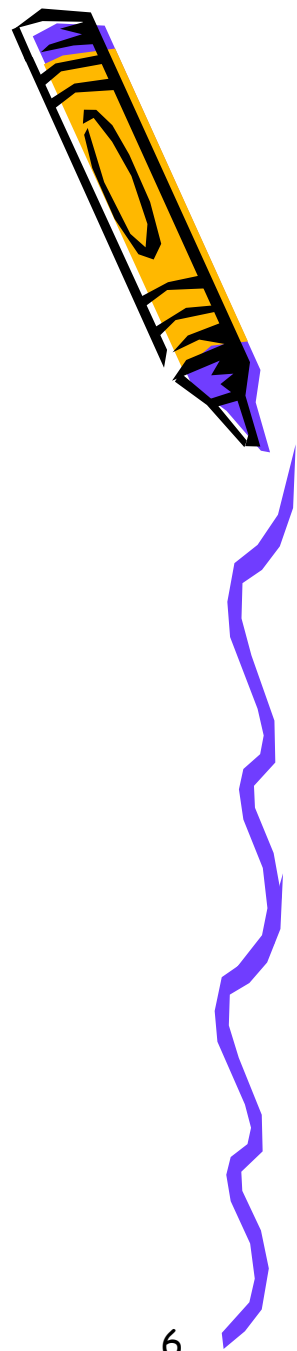
Short exercise

Add some comments to E1 examples

JavaScript Variables

- **Things that are subject to change are called variables**

- **You *assign* a *value* to a variable**

  age = "20";
  colour = "blue";

- **Upon assigning a value the variable *contains* the *value***

  alert (age);
  alert (colour);

- **Unlike other programming languages, in JavaScript you do not necessarily need to declare variables (JavaScript does that for you)**

Declaring and Assigning Variables

var reg_no, colour, mood;

// declare and assign

var reg_no = "NY45XIU", colour = "Red", state ="immaculate";

Note that JavaScript is case sensitive, if you declare a variable as *state* you <u>cannot</u> recall it as *State* or *STATE* or anything else
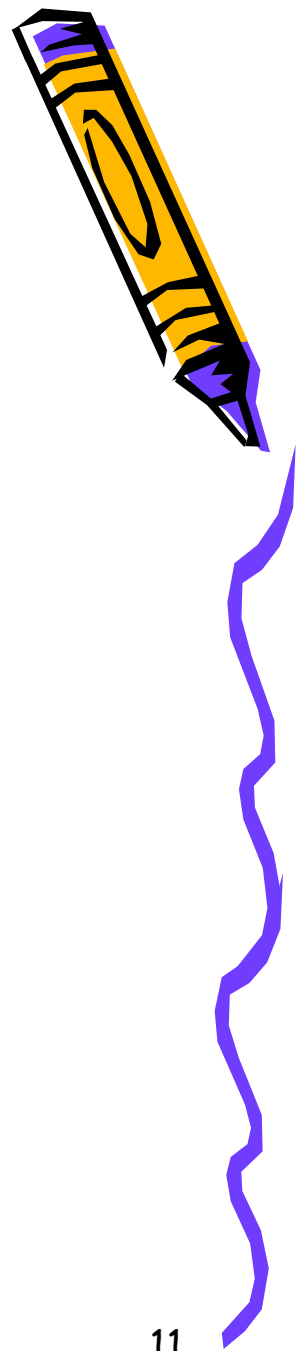
Short exercise

Declare a variable and display in an alert box

JavaScript Arithmetic Operators

- **Arithmetic Operators**

| Operator	Action	Example
+	Addition	4+2=6
-	Subtraction	4-2=2
*	Multiplication	4*2=8
/	Division	4/2=2
%	Modulus	42/4=2
++	Increment by 1	i++ is i+1
--	Decrease by 1	i-- is i-1

JavaScript Logical (comparison) Operators

- **Logical Operators**

| Operator	Meaning	Syntax	Returns
==	Equals to	X==y	false
!=	Not equal to	X!=y	true
<	Less than	X<y	true
>	Greater than	X>y	false
<=	Less than or equal to	X<=y	true
>=	Greater than or equal to	X>=y	false
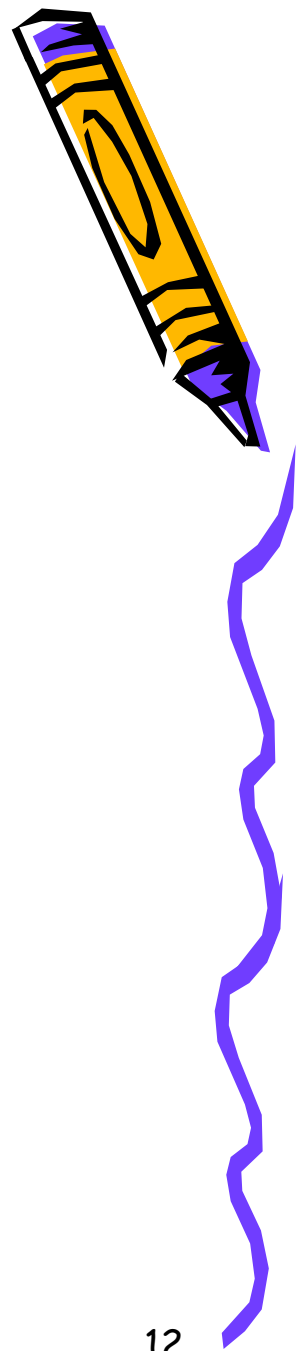
JavaScript Data Types

- **The value of a data can be a number, string, Boolean or special null value**

- **There are three types of <u>numbers</u>:**

    1. Decimal Integers
        - Could be positive or negative
        - Zeros are not allowed as leading character
        - 1234, -999, 0, …
    2. Octal and hexadecimal integers
        - -01234, 0444, 0x12AF3, …
    3. Floating-point numbers
        - IEEE double precision format
        - 0.1234, 20.1234509, 2e4, 3.1e-15
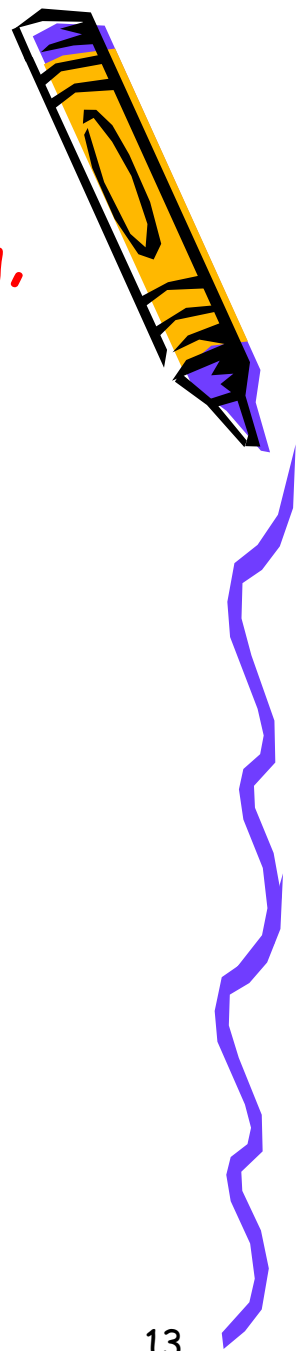
JavaScript Data Types cont...

- **Strings:** consists of characters including letters, numbers, punctuation marks, and spaces.
  - Strings are enclosed in " "
  - var colour = "red", car_type = "sport";
- **Boolean:** return a logical value of *true* or *false*
  - Comparison statements generate Boolean values

  // declare and assign a Boolean value "true" to the variable female

  var female = true,

  // conditional statement

  if (i == 10)

  document.write("you have reached ten");

  Or

  if (name == null)

  document.write("there is no name here")
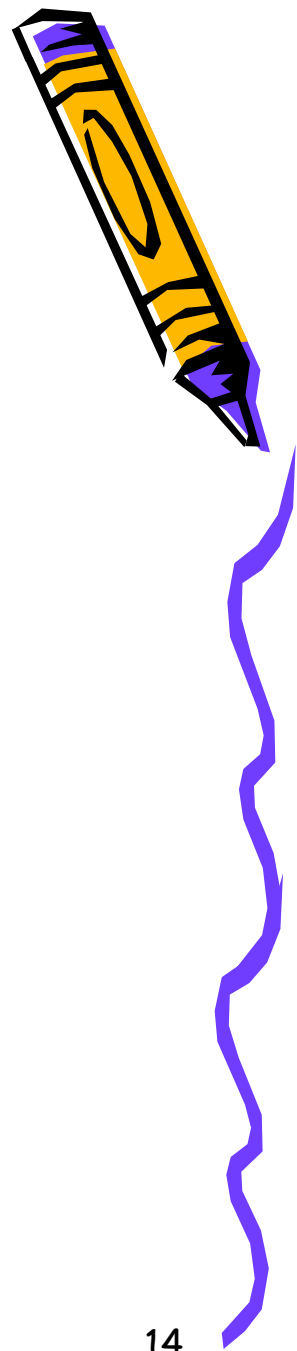
Short Exercise

E2-2 Boolean data: A conditional statement
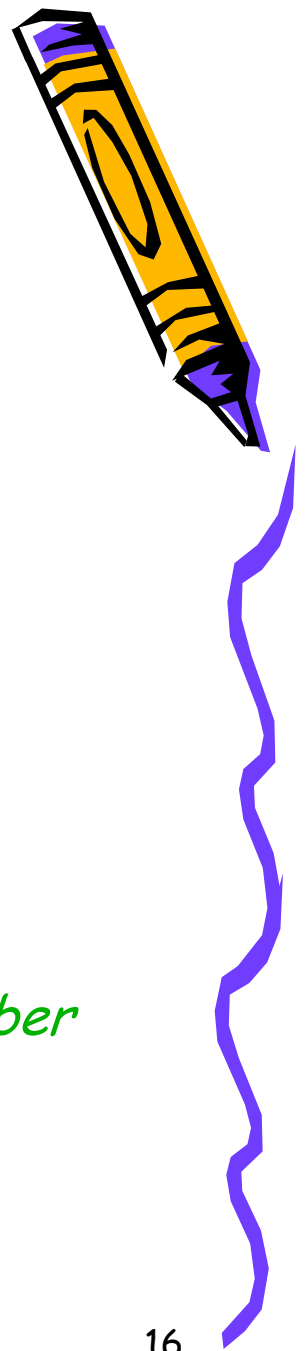
Arrays

- **Use an Array if you wish to assign a set of values to your variable**
  - Array is a grouping of multiple values under the same name
  - Each member of the array is an **element**
  - Declare an array using the reserved word **Array**
  - You can define the length of an array as:

  //declare an array called team with 11 elements
          var football_team = Array(11);
  /* if you wish to declare an array with unspecified number
      of elements*/
          var team = Array( );

Arrays cont…

- **Populating an array by:**
  - Specifying the value
  - Position of the value in the array (**index)**

$$array[index] = element;$$

/* declaring a music band called my_band and specifying the members*/

var my_band = Array(5);

my_band[0] = "Me";

my_band[1] = "Sally";

my_band[2] = "Tom";

my_band[3] = "Sam";

my_band[4] = "Susan";

or

var my_band = Array("Me", "Sally", "Tom", "Sam", "Susan");

You can also mix data types in arrays

Short Exercise

E2-3 an array