

# FUTURA

# LA SCUOLA PER L'ITALIA DI DOMANI



Finanziato  
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**Italiadomani**  
PIANO NAZIONALE DI RIPRESA E RESILIENZA

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Argomento	Specificato nel titolo della slide successiva

Intervento realizzato da  
**ITS**  
TECNOLOGIE  
DELL'INFORMAZIONE  
E DELLA COMUNICAZIONE

COESIONE  
ITALIA 21-27  
PIEMONTE



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# Timing

Timeout, interval & date

Shadi Lahham - Web development

Timeout and interval

# Timing

We may decide not to execute a function immediately, but at a certain time. That's called “scheduling a call”. There are two methods for it:

- `setTimeout` allows to run a function once after an interval of time.
- `setInterval` allows to run a function regularly with a specified interval.

# setTimeout

## Syntax

```
setTimeout(function, milliseconds, param1, param2, ...)
```

### **function**

Required. The function that will be executed

### **milliseconds**

Optional. The number of milliseconds to wait before executing the code. If omitted, the value 0 is used

### **param1, param2, ...**

Optional. Additional parameters to pass to the function. Not supported in very old browsers

# setTimeout

*// Named function*

```
function sayHi() {  
  console.log('Hello');  
}
```

```
setTimeout(sayHi, 1000);
```

*// Anonymous function*

```
setTimeout(function () {  
  console.log('Hello');  
}, 3000);
```

*// Anonymous arrow function*

```
setTimeout(() => {  
  console.log('Hello');  
}, 3000);
```

*// With parameters*

```
function sayHi(phrase, who) {  
  console.log(phrase + ', ' + who);  
}
```

```
setTimeout(sayHi, 1000, 'Hello', 'John');
```

*// Anonymous with parameters*

```
setTimeout(  
  function (value) {  
    console.log(value);  
  }, 1000, 'hello'  
);
```

*// Works in IE9*

```
setTimeout(function () {  
  sayHi('Hello', 'John');  
}, 1000);
```

# clearTimeout

A call to `setTimeout` returns a “timer identifier” `timerId` that we can use to cancel the execution.

## Example

```
let timerId = setTimeout(function () {  
  console.log('never happens');  
}, 1000);  
clearTimeout(timerId);
```

# setInterval

## Syntax

Method `setInterval` has the same syntax as `setTimeout`:

```
setInterval(function, milliseconds, param1, param2, ...)
```

## function

Required. The function that will be executed

## milliseconds

Optional. The intervals, in milliseconds, on how often to execute the code. If the value is not specified, the default value can be different in different browsers

## param1, param2, ...

Optional. Additional parameters to pass to the function. Not supported in very old browsers



# setInterval

*// Named function*

```
function sayHi() {  
  console.log('Hello');  
}
```

```
setInterval(sayHi, 1000);
```

*// Anonymous function*

```
setInterval(function () {  
  console.log('Hello');  
}, 3000);
```

*// Anonymous arrow function*

```
setInterval(() => {  
  console.log('Hello');  
}, 3000);
```

*// With parameters*

```
function sayHi(phrase, who) {  
  console.log(phrase + ', ' + who);  
}
```

```
setInterval(sayHi, 1000, 'Hello', 'John');
```

*// Anonymous with parameters*

```
setInterval(  
  function (value) {  
    console.log(value);  
  }, 1000, 'hello'  
);
```

*// Works in IE9*

```
setInterval(function () {  
  sayHi('Hello', 'John');  
}, 1000);
```

# clearInterval

A call to `setInterval` returns a “timer identifier” `timerId` that we can use to cancel the execution.

## Example

```
// repeat with the interval of 2 seconds
let timerId = setInterval(function () {
  console.log('tick');
}, 2000);

// after 5 seconds stop
setTimeout(function () {
  clearInterval(timerId);
  console.log('stop');
}, 5000);
```

# JavaScript is single threaded

```
function logDelayedMessages() {  
  setTimeout(() => console.log('1 second'), 1000);  
  setTimeout(() => console.log('2 seconds'), 2000);  
  
  while (true) {} // infinite loop  
}  
  
logDelayedMessages();
```

Date and time

# The Date object

A date consists of a year, a month, a day, an hour, a minute, a second, and milliseconds

## Syntax

```
new Date()
```

```
new Date(milliseconds)
```

```
new Date(dateString)
```

```
new Date(year, month, day, hours, minutes, seconds, milliseconds)
```

# The Date object

*// creating a new date*

```
let d = new Date();  
let d = new Date("October 13, 2024 11:13:00"); // implementation-dependent; browser/version/os  
let d = new Date(86400000); // Fri Jan 02 1970  
let d = new Date(2024, 3, 18, 11, 33, 30, 0);
```

# The Date object

*// which dates are these?*

```
let d = new Date(0);
```

```
let d = new Date(-86400000);
```

*// first parameter 'year' - values from 0 to 99 map to the years 1900 to 1999*

```
let d = new Date(99, 5, 24, 11, 33, 30, 0); // Jun 24 1999
```

```
let d = new Date(24, 5, 24, 11, 33, 30, 0); // Jun 24 1924
```

```
let d = new Date(2024, 5, 24, 11, 33, 30, 0); // Jun 24 2024
```

# Displaying Dates

*// Javascript tries to automatically convert dates to strings if they are assigned as Strings  
// the first two outputs are the same*

```
let d = new Date();  
console.log(d);  
console.log(d.toString()); // implementation-dependent; browser/version/os  
console.log(d.toUTCString());  
console.log(d.toDateString());
```



# Date formats

There are generally 4 types of JavaScript date input formats

ISO Date      "2024-03-25" (The International Standard)

Short Date    "03/25/2024"

Long Date     "Mar 25 2024" or "25 Mar 2024"

Full Date     "Wednesday March 25 2024"

# Date get methods

```
// get date  
let d = new Date();  
console.log(d);  
console.log(d.getMonth());  
console.log(d.getMinutes());  
console.log(d.getFullYear());
```

```
new Date(); // creates a Date object representing current date/time  
new Date().valueOf(); // returns number of milliseconds since midnight 01 January, 1970 UTC  
new Date().getTime(); // same as above  
Date.now(); // same as above
```

## Complete list

[https://www.w3schools.com/js/js\\_date\\_methods.asp](https://www.w3schools.com/js/js_date_methods.asp)

[Date methods | mdn](#)

# Date set methods

```
// set date
d.setFullYear(2024, 0, 14); // Jan 14 2024
d.setDate(d.getDate() + 50); // Mar 05 2024 setDate() changes the day of the month

// parse valid dates
let msec = Date.parse('March 21, 2024');
let date = new Date(msec);
```

## Complete list

[https://www.w3schools.com/js/js\\_date\\_methods.asp](https://www.w3schools.com/js/js_date_methods.asp)  
[Date methods | mdn](#)

# Comparing dates

Comparison operators work also on dates

```
let date1 = new Date();
let date2 = new Date("Feb 24, 2024 15:50:00");
if (date1 > date2) {
    console.log('break time');
} else {
    console.log('stay in class');
}
```

Your turn

# 1.Slow list

- Create an array that holds a list of 30 items (food, books, etc.)
- Print one item of the list every second until the list is completely printed
  - Use `setInterval` to achieve this goal
  - Do the same thing using `setTimeout`

## 2.Oh no you don't

- Write a function “useful” that does something useful in Javascript
- Schedule it to run after 10 seconds
- Write another function that cancels the scheduling of the first function
- Use the second function to cancel the first one after 5 seconds and output ‘function cancelled’ to the console

## 3.Weekday

- Write a function `getWeekDay(date)` to show the weekday in short format: 'MO', 'TU', 'WE', 'TH', 'FR', 'SA', 'SU'
- Write another function that does the same in Italian
- Add a language parameter to the function that accepts 'en' or 'it' and outputs the day in the correct language



## 4. Timed calculator

- We will modify 'Calculator' exercise from the lesson about functions
- Rewrite the last function that performs all 4 operations so that there is a delay of 3 seconds between one operation and the next

## 5. My setInterval

- Pretend that setInterval() doesn't exist
- Re-create it using setTimeout naming your function mySetInterval
- Test your new function
- Modify your function so that it automatically stops after 15 intervals

Bonus

## 6.Date ago

- Create a function getDateAgo(date, days) that returns the day of the month n days ago from the given date
- For instance, if today is the 20th, then getDateAgo(new Date(), 1) should be 19th and getDateAgo(new Date(), 2) should be 18th
- Test the function to make sure it works reliably with any valid Date object
- Decide what to do with a negative 'days' parameter
  - e.g. getDateAgo(new Date(), -2)

# 7.Seconds

Write two functions that based on the current date and time output the number of seconds:

- `getSecondsToday()` returns the number of seconds from the beginning of today
- `getSecondsToTomorrow()` returns the number of seconds till tomorrow

## 8. Timed conversion

- We will modify ‘Temperature conversion’ exercise from the lesson about functions
- Call `celsiusToFahrenheit` on temperatures from 0 to 100 so that one temperature is printed to the console every second
  - Use `setInterval` to achieve this goal.
  - Do the same thing using `setTimeout`.

## 9. Format date

Write a function `formatDate(date)` that accepts a date and outputs it as follows:

- If less than a second has passed since the date, output "right now"
- If less than a minute has passed since the date, output "n sec. ago"
- If less than an hour has passed since the date, output "m min. ago"
- Otherwise, output the date in this format "DD.MM.YY HH:mm"
  - e.g. 17.04.16 10:00

# 10.Clock

- Implement a javascript clock that prints the current time to the console every second
- The output should be in the format HH:mm:ss e.g. 17:03:06



# References

[JavaScript Timing Events](#)

[setTimeout\(\) | MDN](#)

[setInterval\(\) | MDN](#)

# References

[JavaScript Date Objects](#)

[Date\(\) constructor | MDN](#)

[JavaScript Date Reference](#)

[JavaScript Date Formats](#)

[JavaScript Date Methods](#)

[Coordinated Universal Time](#)

[Greenwich Mean Time](#)

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