<WA/>
2026

JavaScript packages: example with dates

“The” language of the Web

Enrico Masala
Antonio Servetti

Example: Day.js Package

DAY.JS https://day.js.org/

- Install (from command line)

# initialize the package manager files in the project
# if not already done (choose a name and default for the rest, except for `index.mjs`)

```
npm init
```

# download from registry, add to project package list
# make it available to the scripts in the project

```
npm install dayjs
```

package.json

```
{
  "name": "my-project",
  "version": "1.0.0",
  "main": "index.mjs",
  . . .
  "dependencies": {
    "dayjs": "^1.11.19"
  }
}
```

Folder Structure after running npm

```
my-project
├── node_modules
├── package.json
├── package-lock.json
└── index.mjs
```

- `my-project` is the project root
- `node_modules` is the folder where packages are installed. This is automatically managed/reconstructed by npm, do not touch!
- `package.json` contains (also) the list of packages needed by the project, with their minimum version
- `package-lock.json` contains the list of packages actually installed in the project, with more details (version, package hash)
- `index.mjs` is the code of the project
  - **Develop here!**
  - Insert the `import` statement here to use the package

Example: Day.js Package usage in Node.js

- In the Javascript file, after the package has been installed

index.mjs

```
// import (using name of my choice)
import dayjs from 'dayjs';

// use (depends on the specific package)
let now = dayjs();
console.log(now.format());
```

Day.js main goals

- Compatible with moment.js (most used date library until a few years ago)
  - But very small (2kB) compared to moment.js
- Works in nodejs and in the browser
- All objects are *immutable*
  - All API functions that modify a date, will always return a new object instance
- Localization support
- Plugin system for extending functionality

Basic operations with Day.js

Creating date objects – dayjs() constructor

```
let now = dayjs()  // today
let date1 = dayjs('2019-12-27T16:00');
        // from ISO 8601 format
let date2 = dayjs('20191227');
        // from 8-digit format
let date3 = dayjs(new Date(2019, 11, 27));
        // from JS Date object
let date5 = dayjs.unix(1530471537);
    // from Unix timestamp

By default, Day.js parses in local time
```

https://day.js.org/docs/en/parse/parse

Displaying date objects – format()

```
console.log(now.format());
        2021-03-02T16:38:38+01:00

console.log(now.format('YYYY-MM [on the] DD'));
        2021-03 on the 02

console.log(now.toString());
        Tue, 02 Mar 2021 15:43:46 GMT

By default, Day.js displays in local time
```

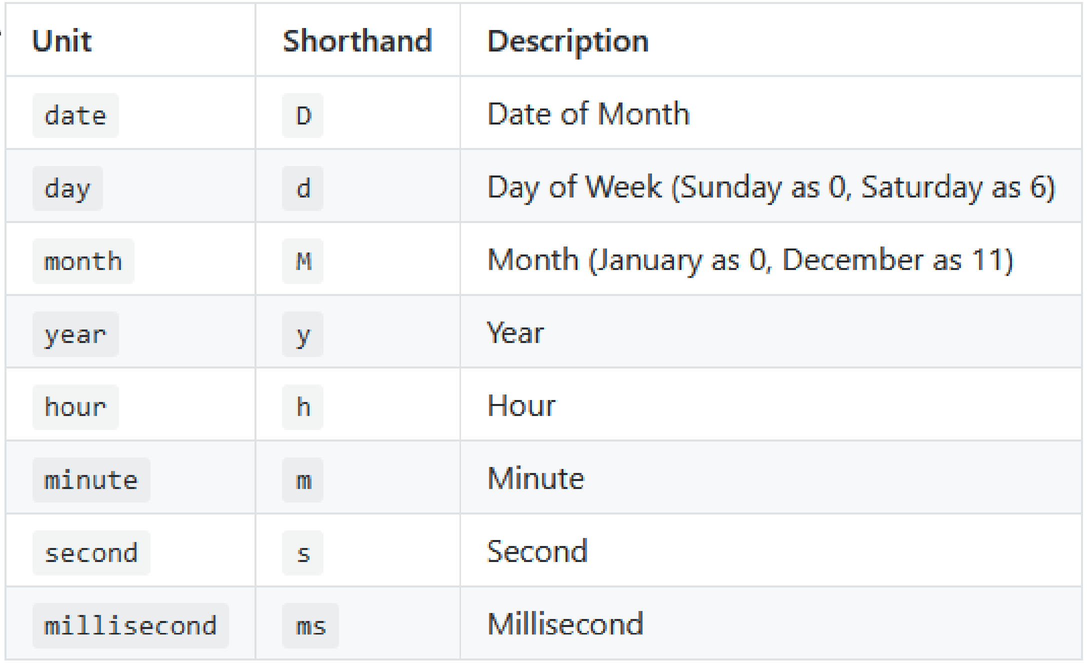
Get/Set date/time components

```
// obj.unit() -> get
// obj.unit(new_val) -> set

let now2 = now.date(15);
let now2 = now.set('date', 15);
        2021-03-15T16:50:26+01:00

let now3 = now.minute(45);
let now3 = now.set('minute',45);
        2021-03-02T16:45:26+01:00

let today_day = now.day();
let today_day = now.get('day');
        2
```



Unit	Shorthand	Description
`date`	`D`	Date of Month
`day`	`d`	Day of Week (Sunday as 0, Saturday as 6)
`month`	`M`	Month (January as 0, December as 11)
`year`	`y`	Year
`hour`	`h`	Hour
`minute`	`m`	Minute
`second`	`s`	Second
`millisecond`	`ms`	Millisecond

https://day.js.org/docs/en/get-set/get-set

Date Manipulation and Comparison

```
let wow = dayjs('2019-01-25').add(1, 'day').subtract(1, 'year').year(2009).toString() ;
// "Sun, 25 Jan 2009 23:00:00 GMT"
```

- Methods to "modify" a date (and return a modified one)
- `.add` / `.subtract`
- `.startOf` / `.endOf`
- `d1.diff(d2,` *'unit'*`)`
- Specify the unit to be added/subtracted/rounded
- Can be easily *chained*

- Day.js objects can be compared
- `.isBefore` / `.isSame` / `.isAfter`
- `.isBetween`
- `.isLeapYear` / `.daysInMonth`

Day.js Plugins

- To keep install size minimal, several functions are only available in *plugins*
- Plugins must be
  - Loaded
  - Registered into the libraries
  - (in this case, they come with dayjs package, no need to install them)
- Then, functions may be freely used

```
// load plugin (already installed)
import isLeapYear from
       'dayjs/plugin/isLeapYear.js';

// register plugin
dayjs.extend(isLeapYear);

// use function
console.log(now.isLeapYear()) ;
```

Advanced Day.js Topics

- Localization / Internationalization
  - Language-aware and locale-aware parsing and formatting
  - Various formatting patterns for different locales/languages
- Durations
  - Measuring time intervals (the difference between two time instants)
  - Interval arithmetic
- Time Zones
  - Conversion between time zones

License