JSP table processing

Web Programming

AA 2013-2014 Gino Perna

Tabelle

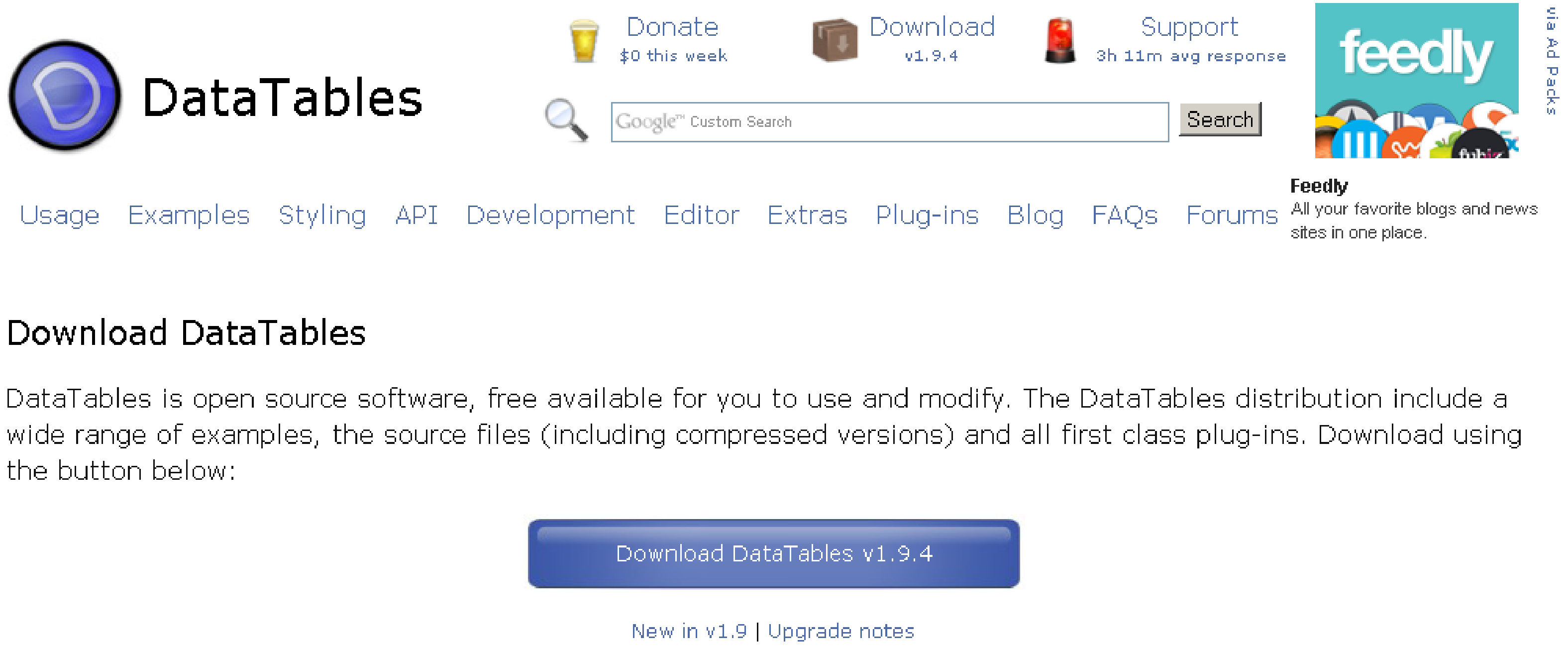
- Praticamente qualsiasi applicazione web si ritrova, ad un certo punto, a dover visualizzare una tabella
- Bisogna poter dare all'utente la possibilita'di navigare la tabella stessa (usabilita')

Tabelle

- Paginare e ricercare all'interno delle tabelle e' una operazione molto complessa
- Conviene utilizzare librerie gia' pronte per lo scopo
-

Tabelle

- Datatables.net



Download DataTables

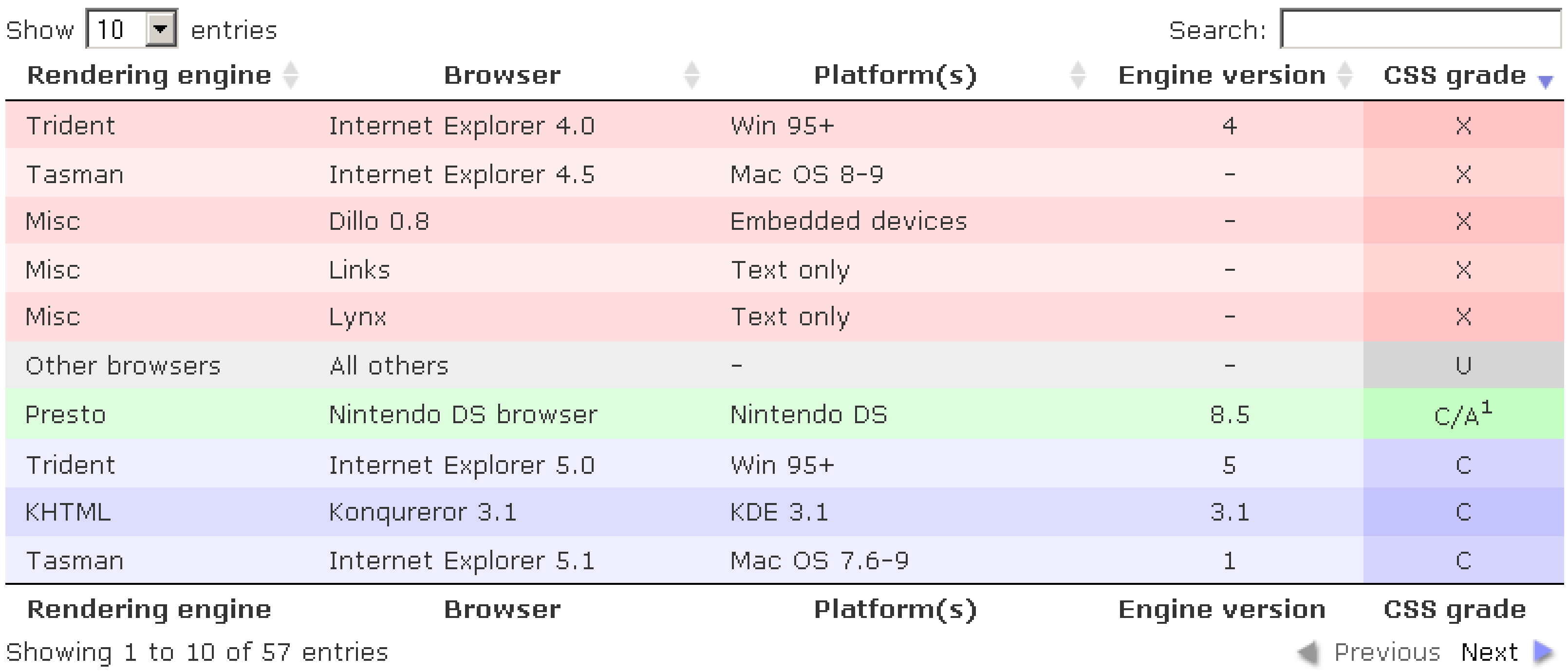
DataTables is open source software, free available for you to use and modify. The DataTables distribution include a wide range of examples, the source files (including compressed versions) and all first class plug-ins. Download using the button below:

Datatables,net

- Libreria di visualizzazione tabelle molto versatile in javascript
- Permette una minima interazione lato server
- Molto ben fornita di funzionalita' di sorting e filtering

Datatables.net

- esempio



Show 10 entries

Search:

Rendering engine	Browser	Platform(s)	Engine version	CSS grade
Trident	Internet Explorer 4.0	Win 95+	4	X
Tasman	Internet Explorer 4.5	Mac OS 8-9	-	X
Misc	Dillo 0.8	Embedded devices	-	X
Misc	Links	Text only	-	X
Misc	Lynx	Text only	-	X
Other browsers	All others	-	-	U
Presto	Nintendo DS browser	Nintendo DS	8.5	C/A[1]
Trident	Internet Explorer 5.0	Win 95+	5	C
KHTML	Konqureror 3.1	KDE 3.1	3.1	C
Tasman	Internet Explorer 5.1	Mac OS 7.6-9	1	C
Rendering engine	**Browser**	**Platform(s)**	**Engine version**	**CSS grade**

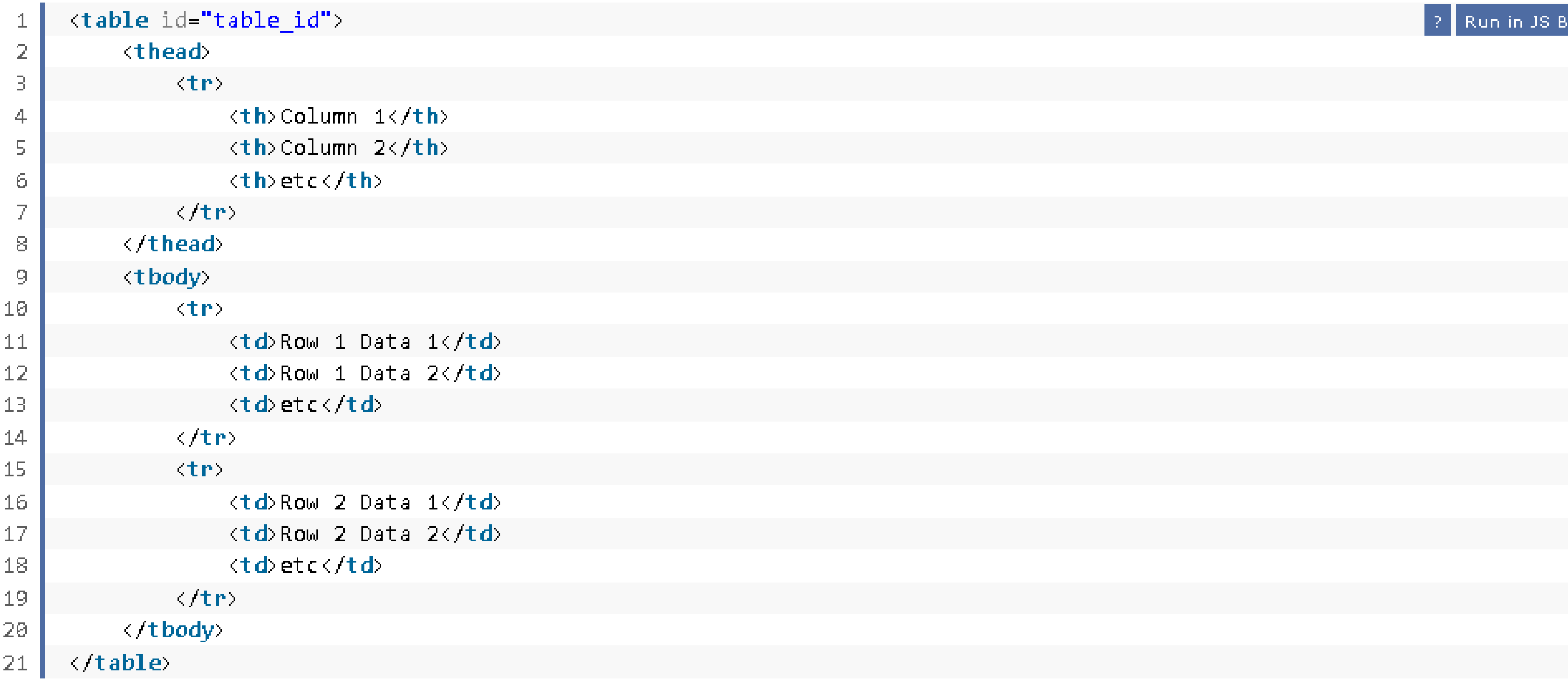
Showing 1 to 10 of 57 entries

Datatables introduction

- DataTables operates on the principle of progressive enhancement, whereby an enhanced and interactive table will be presented to the end user if their browser has the required capabilities. When you initialise the jQuery.dataTable object, information about the table is read directly from the HTML page. In combination with the default values for the features in DataTables, this makes it very easy to integrate directly into your web-site or web-application. Optionally, you can use the initialisation parameters to load data from locations other than the DOM, such as a server-side processing script or an Ajax obtained JSON file.

Datatables prerequisites

In order for DataTables to be able to function correctly, the HTML for the target table must be laid out in a well formed manner with the 'thead' and 'tbody' sections declared. For example:



```html
<table id="table_id">
    <thead>
        <tr>
            <th>Column 1</th>
            <th>Column 2</th>
            <th>etc</th>
        </tr>
    </thead>
    <tbody>
        <tr>
            <td>Row 1 Data 1</td>
            <td>Row 1 Data 2</td>
            <td>etc</td>
        </tr>
        <tr>
            <td>Row 2 Data 1</td>
            <td>Row 2 Data 2</td>
            <td>etc</td>
        </tr>
    </tbody>
</table>
```

Defining the 'tfoot' section is optional from the view point of DataTables, and if defined will be used in a similar manner to how thead is used, with the exception of not being able to use it to sort data.

Datatables datasources

- DataTables can take the data that it is to display from a number of different sources. This means that you are not limited to giving DataTables what it needs in one specific way, providing a great deal of flexibility. There are four core methods of giving data to DataTables:
- DOM (i.e. an HTML table in a page)
- JavaScript array
- Ajax source - a server-side file, with JSON formatting
- Server-side processing - where the server will deal with pagination, filtering etc

Datatables datasources

- DOM - At the basic level, you can give DataTables a reference to a table which already exists in your HTML page and it will enhance it for you. DataTables will read all of the information about the table from the page (the DOM) and add features such as filtering, paging and sorting. This follows the basis for progressive enhancement where a table will be enhanced if JavaScript is available, and not if the browser doesn't have the required capabilities.

Datatables datasources

- JavaScript array - This provides the ability to give DataTables the information that you wish to display in the table as a JavaScript 2D array (i.e. an array of arrays). This is useful when your data in computed by JavaScript, or when adding a table to a page dynamically. It can also be used along side progressive enhancement to present the full table when JavaScript is enabled, but the HTML table would only show the first "page".

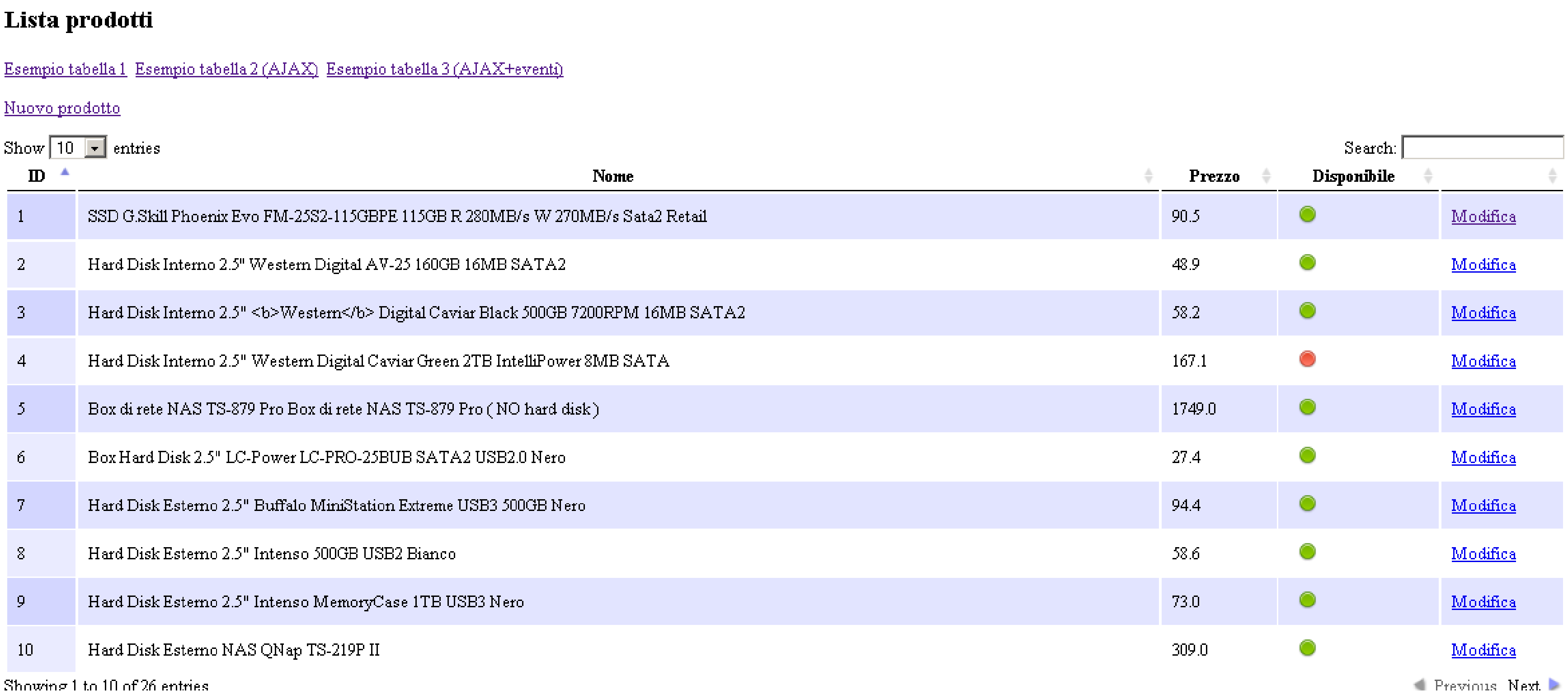
Datatables datasources

- Ajax source - When the data you wish to display is available from a server and is not yet in the browser, you can ask DataTables to go to the server and pull the data back from it for display. A common use case for this is when you are displaying live information which could be periodically updated. Although the basic format that DataTables requires is fixed (an object with a 2D array called "aaData") you can use fnServerData to customise the Ajax call that DataTables makes, and also post-process data from one format to that which DataTables expects.
-

Datatables datasources

- Server-side processing - When dealing with large data sets (for example 20 million rows) the web-browser simply can't cope with the amount of processing that is required for DataTables. Instead it's a good idea to pass off the data crunching to a process specifically designed for that - namely an SQL database (or any other data source!). The server-side process will do all of the pagination, sorting, filtering etc, while DataTables will simply display the results and handle user interaction.

Esempio



Lista prodotti

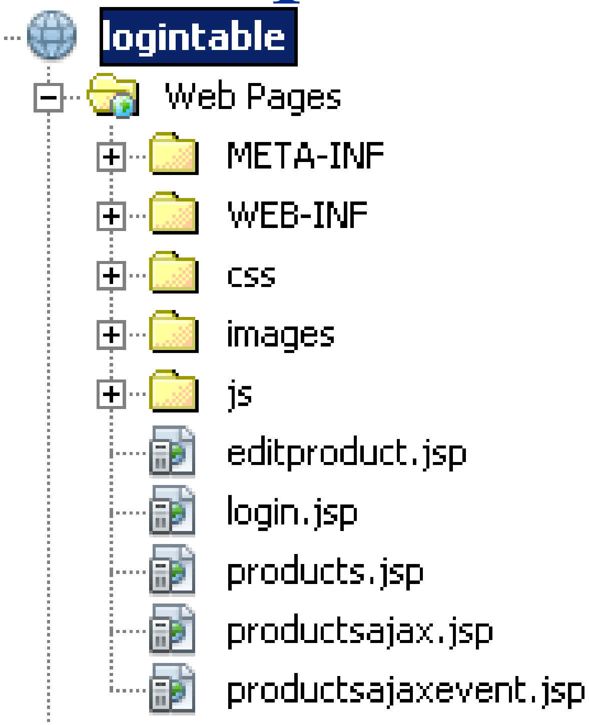
Esempio tabella 1 Esempio tabella 2 (AJAX) Esempio tabella 3 (AJAX+eventi)

Nuovo prodotto

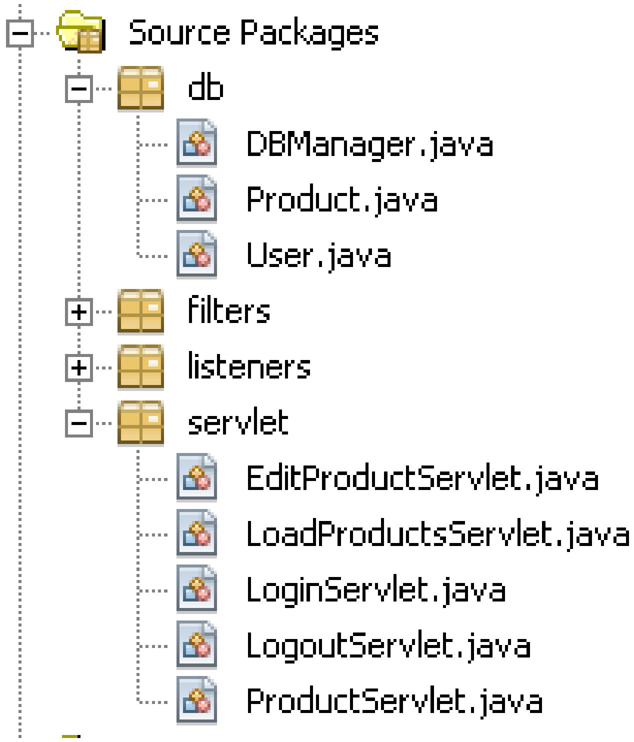
ID	Nome	Prezzo	Disponibile	
1	SSD G.Skill Phoenix Evo FM-25S2-115GBPE 115GB R 280MB/s W 270MB/s Sata2 Retail	90.5	🟢	Modifica
2	Hard Disk Interno 2.5" Western Digital AV-25 160GB 16MB SATA2	48.9	🟢	Modifica
3	Hard Disk Interno 2.5" <b>Western</b> Digital Caviar Black 500GB 7200RPM 16MB SATA2	58.2	🟢	Modifica
4	Hard Disk Interno 2.5" Western Digital Caviar Green 2TB IntelliPower 8MB SATA	167.1	🔴	Modifica
5	Box di rete NAS TS-879 Pro Box di rete NAS TS-879 Pro (NO hard disk)	1749.0	🟢	Modifica
6	Box Hard Disk 2.5" LC-Power LC-PRO-25BUB SATA2 USB2.0 Nero	27.4	🟢	Modifica
7	Hard Disk Esterno 2.5" Buffalo MiniStation Extreme USB3 500GB Nero	94.4	🟢	Modifica
8	Hard Disk Esterno 2.5" Intenso 500GB USB2 Bianco	58.6	🟢	Modifica
9	Hard Disk Esterno 2.5" Intenso MemoryCase 1TB USB3 Nero	73.0	🟢	Modifica
10	Hard Disk Esterno NAS QNap TS-219P II	309.0	🟢	Modifica

Showing 1 to 10 of 26 entries

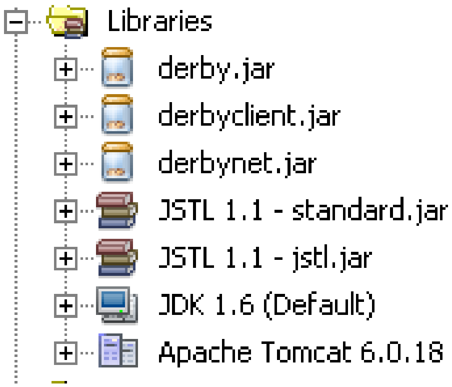
Esempio



```
logintable
  Web Pages
    META-INF
    WEB-INF
    css
    images
    js
    editproduct.jsp
    login.jsp
    products.jsp
    productsajax.jsp
    productsajaxevent.jsp
```



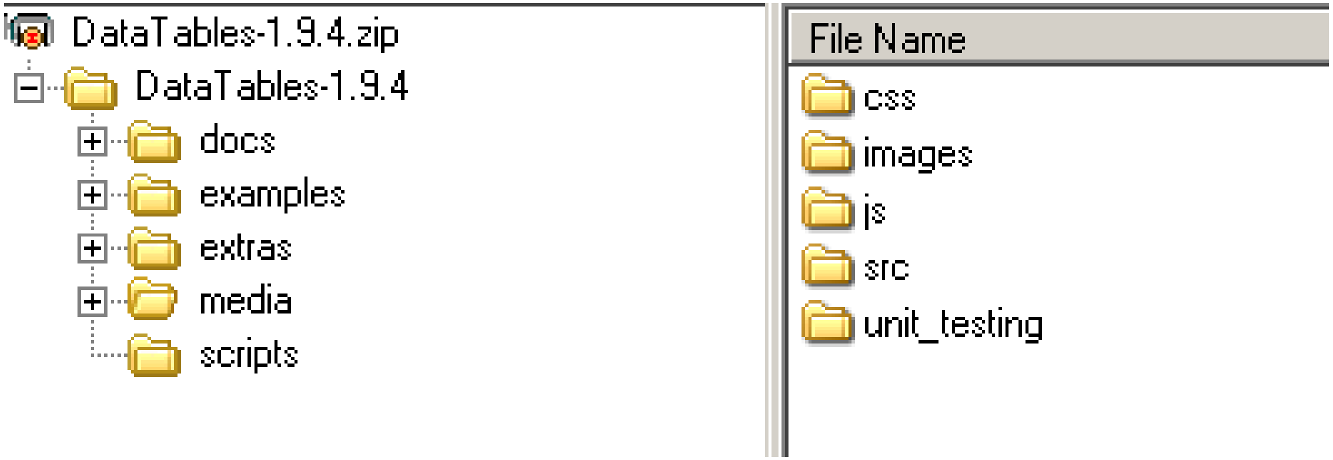
```
Source Packages
  db
    DBManager.java
    Product.java
    User.java
  filters
  listeners
  servlet
    EditProductServlet.java
    LoadProductsServlet.java
    LoginServlet.java
    LogoutServlet.java
    ProductServlet.java
```



```
Libraries
  derby.jar
  derbyclient.jar
  derbynet.jar
  JSTL 1.1 - standard.jar
  JSTL 1.1 - jstl.jar
  JDK 1.6 (Default)
  Apache Tomcat 6.0.18
```

Esempio

- Scaricare dal sito datatables.net lo zip e recuperare dalla directory *media* le cartelle *js,css,images*



DataTables-1.9.4.zip
DataTables-1.9.4
docs
examples
extras
media
scripts

File Name
css
images
js
src
unit_testing

Esempio

- L'utilizzo della tabella avviene attraverso l'inserimento del seguente pezzo di codice nel body

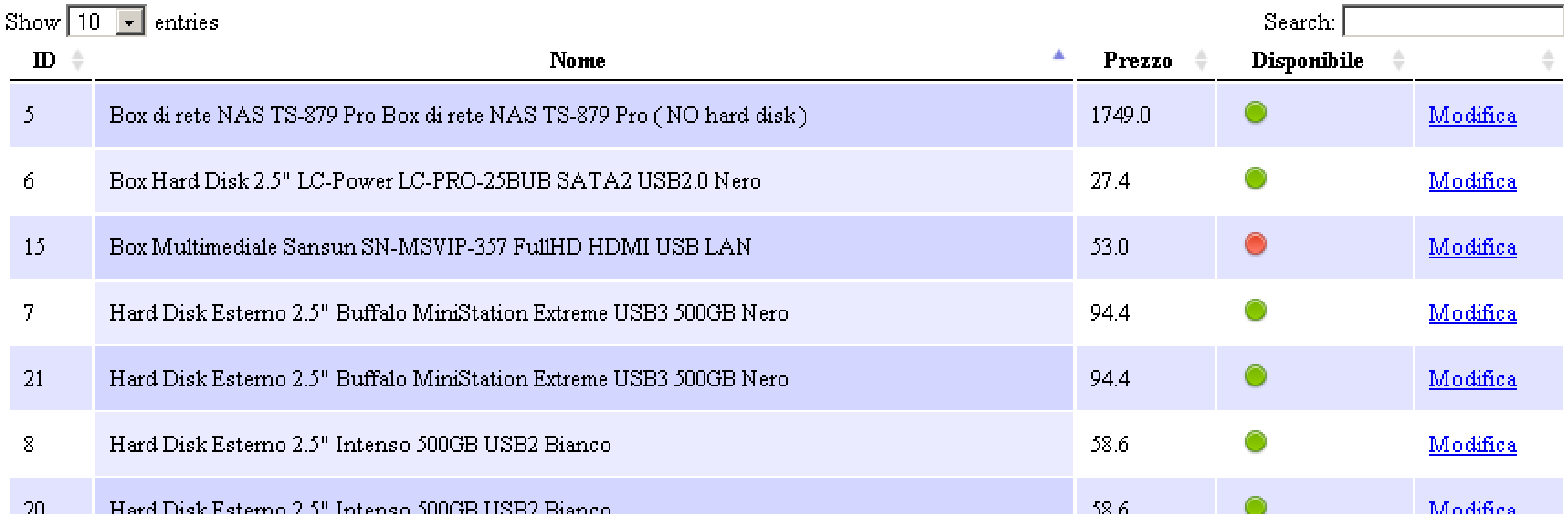
```
<script>
     $(document).ready(function() {
         $("#productstable").dataTable();
     });
 </script>
```

Dove #productstable e' il nome della tabella in html

```
  <table id="productstable" >
            <thead>
                <tr> ...<th>ID</th>
                    <th>Nome</th>
                      …. .
                <tr>
            </thead>
```

Esempio

- A questo punto la tabella e' formattata direttamente con sorting delle colonne, paginazione e search



Show 10 entries

Search:

ID	Nome	Prezzo	Disponibile	
5	Box di rete NAS TS-879 Pro Box di rete NAS TS-879 Pro (NO hard disk)	1749.0	🟢	Modifica
6	Box Hard Disk 2.5" LC-Power LC-PRO-25BUB SATA2 USB2.0 Nero	27.4	🟢	Modifica
15	Box Multimediale Sansun SN-MSVIP-357 FullHD HDMI USB LAN	53.0	🔴	Modifica
7	Hard Disk Esterno 2.5" Buffalo MiniStation Extreme USB3 500GB Nero	94.4	🟢	Modifica
21	Hard Disk Esterno 2.5" Buffalo MiniStation Extreme USB3 500GB Nero	94.4	🟢	Modifica
8	Hard Disk Esterno 2.5" Intenso 500GB USB2 Bianco	58.6	🟢	Modifica
20	Hard Disk Esterno 2.5" Intenso 500GB USB2 Bianco	58.6	🟢	Modifica

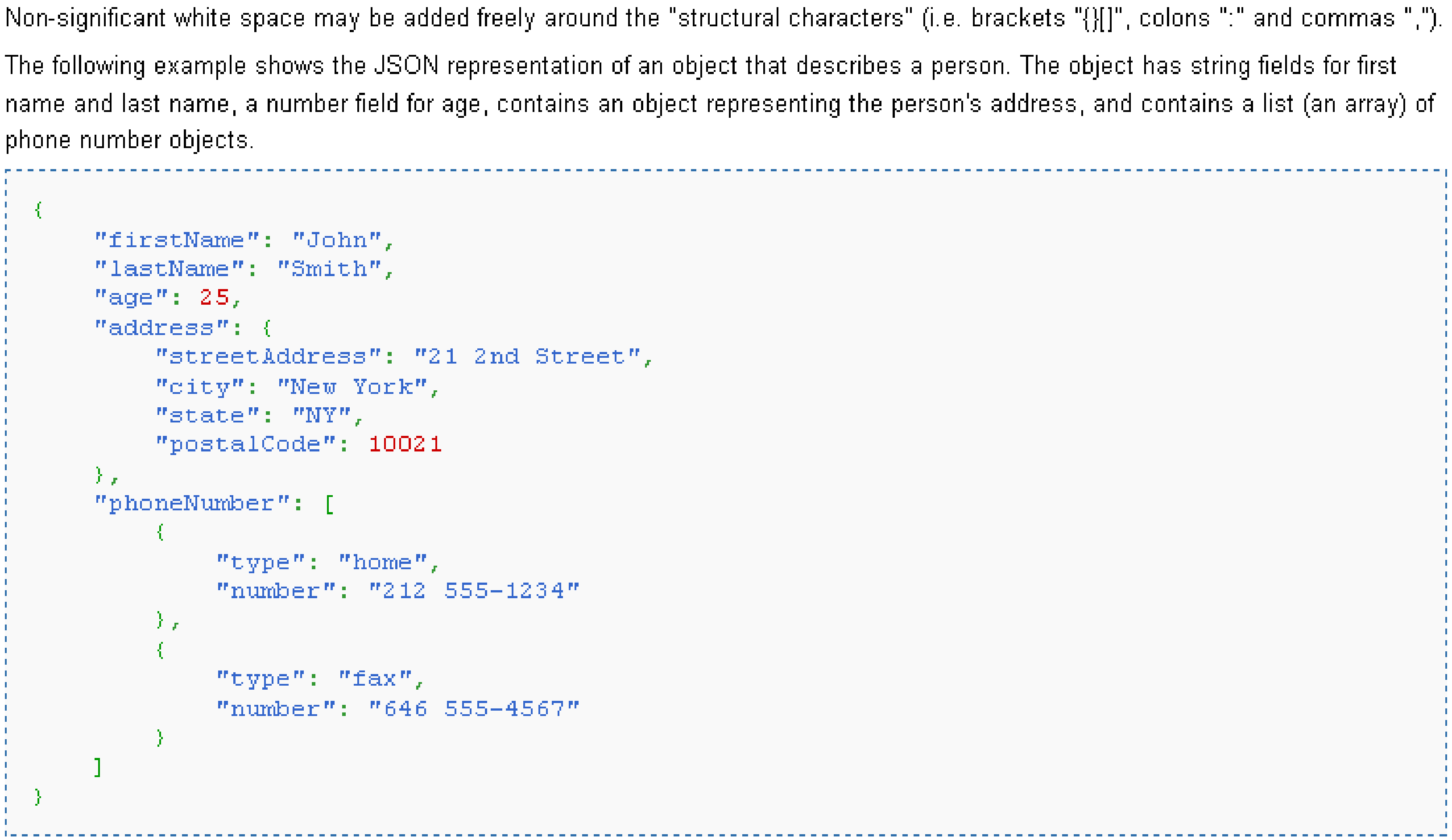
Esempio

- Sorgenti pagine nella documentazione allegata
- L'esempio prevede tre modalita':
  - Statica: (DOM) carico tutto attraverso uno foreach in EL
  - Dinamica: AJAX, Carico la tabella quando visualizzo la pagina attraverso una servlet che la restituisce

JSON – JavaScript Object Notation

- is a text-based open standard designed for human-readable data interchange. It is derived from the JavaScript scripting language for representing simple data structures and associative arrays, called objects. Despite its relationship to JavaScript, it is language-independent, with parsers available for many languages.
- The JSON format was originally specified by Douglas Crockford, and is described in RFC 4627. The official Internet media type for JSON is application/json. The JSON filename extension is .json.
- The JSON format is often used for serializing and transmitting structured data over a network connection. It is used primarily to transmit data between a server and web application, serving as an alternative to XML.

JSON – JavaScript Object Notation



Non-significant white space may be added freely around the "structural characters" (i.e. brackets "{}[]", colons ":" and commas ",").

The following example shows the JSON representation of an object that describes a person. The object has string fields for first name and last name, a number field for age, contains an object representing the person's address, and contains a list (an array) of phone number objects.

```
{
    "firstName": "John",
    "lastName": "Smith",
    "age": 25,
    "address": {
        "streetAddress": "21 2nd Street",
        "city": "New York",
        "state": "NY",
        "postalCode": 10021
    },
    "phoneNumber": [
        {
            "type": "home",
            "number": "212 555-1234"
        },
        {
            "type": "fax",
            "number": "646 555-4567"
        }
    ]
}
```

Ajax load

- La versione che utilizza la richiesta dinamica opera attraverso una servlet che restituisce la tabella (od il pezzo di tabella se fosse troppo lunga) in formato JSON, formattandola al volo senza utilizzo di librerie nella servlet ProductServlet

Esercizio

- Provare ad implementare il codice partendo dai sorgenti forniti
- Il databse e' fornito nel file di testo SQL
-