JavaScript Form Generator

Disclaimer

El Condor – CONDOR INFORMATIQUE – Turin

Comments, suggestions and criticisms are welcomed: mail to rossati@libero.it

Conventions

Commands syntax, instructions in programming language and examples are with font `COURIER NEW`. The optional parties of syntactic explanation are contained between `[square parentheses]`, alternatives are separated by `|` and the variable parties are in *`italics`*; <u>*`underlined`*</u> item indicates a default value.

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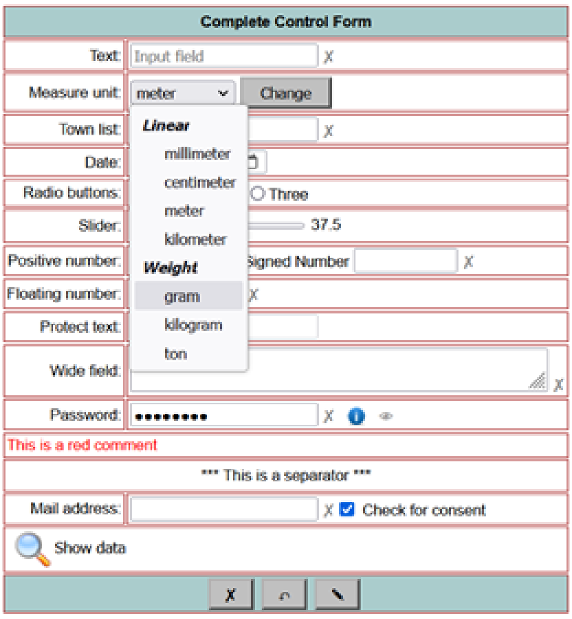
1 Form generator

Form generator, briefly *FormGen*, is a JavaScript script which contains the class `fGen` that allows build and handle forms; *FormGen* is sufficiently generalized for create a wide set of useful forms from simple message box to relative complex input forms, based on a list of controls or widgets (some text type, buttons, check boxes, lists, radio buttons, comment and images); moreover *FormGen* supports event management and server interaction by Ajax.

The form presentation can be customized both via CSS both by the instructions present in the description of the widgets.

The form can be submitted or managed locally.

Furthermore, the `fGen` class exposes some utility functions such as the management of floating objects, the creation of `DOM` objects, etc.



Complete Control Form

Text:	Input field ✗
Measure unit:	meter ⌄ Change
Town list:	✗
Date:	
Radio buttons:	○ Three
Slider:	37.5
Positive number:	Signed Number ✗
Floating number:	✗
Protect text:	
Wide field:	✗
Password:	•••••••• ✗
This is a red comment	
*** This is a separator ***	
Mail address:	✗ ☑ Check for consent
Show data	

Figure 1: Example of form

1.1 Using the form generator

The form builder is contained in `formgen.js` script, which contains the class `fGen`.

This function can be invoked for create a new form object:

```
    fGenObject = new fGen(containerID,control_list)
```

`containerID` is a *`ID`* of `div` tag (it can also be a `span` or a `td` tag) which will contain the created form.

☞ If the `id` is not present, it is created a `<div>` tag with `id fg_PopUpn` and `class fg_PopUp` in order to create a movable form (see 1.5.3 Movable forms).

The second parameter is a characters constant or variable containing the list of controls (widgets).

1.2 Data description

Every control is characterized by a list of attributes separated by space(s) in this order: *`Type, Field Name, Field Label,`* and *`Extra field(s)`*. Controls are separated by line terminators[1].

In addition to the controls there are some others information (*Pseudo types*) with different semantics that will be detailed in the paragraphs dedicated to them.

`Extra field(s)` are attributes that depends of the control type,if the attribute contains space(s) it must be enclosed by single or double quote.

☞ Some data (see 1.4.4 Dictionary) can contain hexadecimal values to five digits in the form `\x`*`nnnnn`* the possibly commas, equals and `&` signs, must be coded respectively by `\x2C, \x3D` and `\x26`. Alternatively, the attributes can be enclosed by single or double quote in order to contains directly the above characters.

1.2.1 Type

The *`Type`* is indifferent to the case; if it starts with `//` it is a comment.

- **Buttons**:
  - **B** button;
  - **R**, **RDB** radio button, a set of Radio buttons;
- **CKB** check box;

[1] All line separators Windows, MacOS, Unix i.e. `CRLF`, `CR` and `LF`.

- **CKL** check box list;
- **Combo box** and **lists**:
  - **CMB** drop down list for select an item;
  - **L** or **LIST** is a drop down list associated to a set of texts, where one can choose an item or insert one not present in the list;
- **I**, **IMG**, **IMAGE** image,
- **Text** fields:
  - **C**, **COMMENT** comment;
  - **DATE**;
  - **S** seek bar or slider;
  - **T** or **TEXT** text field (numbers, File, password);
  - **H** hidden field.

1.2.2 Field Name

Is the name of the control that, when the form is submitted, it is used by the programs on the server to access its value; the name is case-sensitive. The `ID` of the control that can be used to access or to add an event management, has the form: *`formNameFieldName`* (*`formName`* is provided by pseudo type `Form` see parag. `1.4.6`).

☞ If the name is not present it is generated the name `fg_`*`i`*, where *`i`* is a progressive number.

☞ The possible space(s) contained in the name are replaced by underscore if received by a PHP script.

1.2.3 Field Label

Is the label of control or the caption of button (in case of graphic buttons it is the name of the image on the server); if omitted it is used the *`FieldName`* that it is transformed if it has those formats:

- *`fieldName`* it becomes *`Field name`*,
- *`field_name`* it becomes *`Field name`*.

The label can contain images, the file name must be separated by space from the test:

```
R Sex 'Sex images/sex.png' 'M=&#9794; Male,F=&#9792; Female,N=Not specified'
```

1.2.4 Extra

`extra field(s)` is (are) used for add information to the control, these will be specified in the relative data description paragraphs.

Apart from the first extra field of combo box, check list and Radio buttons, *`extra field(s)`* can contains parameters in the form *`key`* `[`*`value`*`]`, or *`key=value`* for example:

```
T psFile 'PDF and PS files' Width 50 File 'Accept = .pdf,.ps'
```

☞ The order of parameters are indifferent, the parameter *`key`* is case indifferent.

1.2.4.1 After, Below

The `after` or `below` parameter can affects buttons, combo boxes, check boxes, comments, radio buttons and texts.

1.2.4.2 Class

For add a customer CSS style.

1.2.4.3 Disabled

For text and buttons; ☞ The texts `disabled` are marked `readonly` for to be present in the transmitted form.

1.2.4.4 Event and Call

Note that there is also a pseudo type `Event` for handle events: the syntax for inserting the management of an event relating to a control is illustrated below.

- `[Event` *`eventType`*`] server` *`URI`* `alert|call` *`function`*`|set` *`fieldName|ID`* (*)
- `[Event` *`eventType`*`] alert` *`message`*
- `[Event` *`eventType`*`] call` *`function`*`|'`*`function parameter`*`'`

(*) `server` *`URI`* is an Ajax command, the response is alerted or is passed to the *`function`* or is inserted in the widget with the *`fieldName`* or *`ID`* indicated.

☞ `Event` *`eventType`* can be omitted for the event characteristic of the widget; see below:

- Button `click`
- Check box: `change`
- Combo box: `change`
- List `keydown`: `Enter key`
- Radio buttons: `change`
- Text `keydown`: `Enter key`
- Text with parameter `file`: `change`

Some examples:

```
B Start &#x270E; width 40 call 'myHandler echo.php'
Rdb imageType '' .gif,.jpg,.png call getImageList
B Clock images/clock.png inline 'Get Time' server getSample.php?Type=Time set
Text
B xExcel images/excel.png Event mouseover alert 'Create Excel file' inline
'Excel file'
```

Table 1: Examples of event on control

1.2.4.5 Title

For add `title` attribute to the control.

1.2.4.6 Value or Default

Sets the initial value of the control.

1.2.4.7 Width

- `width` the width is on characters for test fields; for Comments, Buttons and Sliders the width is in pixel.

1.3 Summary by type

1.3.1 Buttons and graphic buttons

`B` *`name caption|imageFile attribute(s)`*

`attribute(s)`:

- `After|Below` *`fieldName`*
- `Class` *`className`*
- `Disabled`
- `Event` *`eventType`* `...`
- `Inline` *`label`* the button is located between the controls and replaces the label, *`label`* is inserted after the button
- `Title` *`title`*
- `Width` *`nn`* the dimension of the button or image in pixels

Buttons can be used both for take different actions on form both for show user caption instead of default `Ok`, `Reset` or `Cancel`.

☞ See the `Event` pseudo type for a more flexible data management.

☞ The possibly function is called with the `id` of the button, to access the form:

```
const frm = $(button).form
```

the data on the form can be accessed by *`ctrlName`* or by `Id`, in this case note that the `Id` name is `[`*`formName`*`]`*`ctrlName`* :

`frm[`*`ctrlName`*`].value` or `document.getElementById(`*`ctrlId`*`).value`

1.3.2 Check box

`Ckb` *`name label atRightlabel attribute(s)`*

`attribute(s)`:

- `After|Below` *`fieldName`*
- `Class` *`className`*
- `Event` *`eventType`* `...`
- `On` if it is checked on start
- `Title` *`title`*
- `Value|Default` *`value`* is the value returned when checked, if omitted the value is `On`

☞ In the form submitted the value returned is present only if the check is checked.

1.3.3 Check box List

`CKL` type generates a set of vertical aligned check boxes.

`Ckl` *`name label checkList attribute(s)`*

`attribute(s)`:

- `Class` *`className`*
- `Value|Default` can be one of check box that is checked

The *`checkList`* is a list of field names separated by `,` (comma) with syntax: `[`*`key`*`=]`*`value`*`[, [`*`key`*`=]`*`value`*`[,...`; the field name of check box is *`key`* if present, otherwise is *`value`*; *`value`* is the description that appears after the check box.
To add an event handler to some of check box use the Event pseudo type (see example below).
The hidden field *`name`* of the check box list will contain the number of check boxes selected.
Ex.

```
CKL ProgramLanguages '' 'C=C\x2C C#,JS=JavaScript,PHP,PYTHON,RUST' Default JS
Event click on JS alert Javascript
```

1.3.4 Combo boxes and Lists

`Cmb|L|List` *`name label items`* `[`*`attribute(s)`*`]`

`attribute(s)`:

- `After|Below` *`fieldName`*
- `Class` *`className`*
- `Default|Value` *`value|key`*
- `link` *`fieldName`* `[exposed|group]` (only for combo box) this parameter allows to put into a text *`fieldName`* the value taken from the combo; in case of text area the text is added to the text that can be already present.
- `Event` *`eventType`* `...`
- `Multiple` enables a multiple choice
- `Title` *`title`*

`CMB` type is a Combo box (or Drop Down list) that permits to choice a value from a list; the **`LIST`** (**`L`**) type accepts an input value or an item selected from the list.

The *`items`* fields contain a set of `key value` (see description in Radio button).

If there is only one combo or list in the form, the form has no buttons and it is exited when a list item is selected or a value is inserted ending with Enter key (unless the form is static, see Form 1.4.6).

It is possible to have a combo with items grouped (the HTML `optgroup` tag), the group is identified by the syntax `=`*`groupLabel`*, see the example below.

Example 1: One choice without buttons

```
Form frm2 '' server echo.php call receive
CMB Unit 'Measure Unit'
=Linear,mm=millimeter,cm=centimeter,m=meter,km=kilometer,=Weight,g=gram,kg=kilo
gram,t=ton
```

☞ After submission the field *`fieldName`*`_Group` contains the possible group name(s) and the field *`fieldName`*`_Exposed` contains the value(s) shown.

1.3.5 Comment

The comment is displayed in one line, occupying both columns.

`Comment|C [`*`fieldName`*`] '`*`some comment`*`' [`*`attribute(s)`*`]`

`attribute(s)`:

- `After|Below` *`fieldName`*
- `Center|right|justify` default is `left` justified
- `Class` *`className`*
- `Default|Value`
- `Row|rows` *`n`*
- `width` *`pixels`*

☞ Comments are in a `span` tag, for change the contents by program it can be used the `innerHTML` method on the ID *`formNamefieldName`*. If the comment contains a carriage return it is converted in `<br>`.

The `Row` parameter force the height dimension of the comment and add a possibly scroll bar.

Example 2: Comments

```
Form frm 'Commments Form' server echo.php
T Text '' hint 'Input field'
Comment '' 'Name and Surname' after Text
C '' '<HR>'
T psw Password password hint 'Insert password'
C '' 'From 6 to 12 characters' class red after psw
B fg_Cancel &#x2718 width 40
B fg_Reset &#x21B6 width 40
B Start &#x270E width 40
```

1.3.6 Date

`Date` *`fieldName label`* `[`*`attribute(s)`*`]`

`attribute(s)`:

- `Default|Value` *`yyyy-mm-dd`*`|today`
- `Class` *`className`*

HTML 5 Supported.

☞ The possibly default must be in the form *`yyyy-mm-dd`*; it is also accepted `today`.

1.3.7 Hidden field

`H|Hidden` *`fieldName`* `[`*`value`*`]`

Example:

```
     H MAX_FILE_SIZE 5000
     T Attachment 'Attachment file' file width 30 filter .gif,.jpg,.png
```

☞ `MAX_FILE_SIZE` sets the maximum file size, in bytes, accepted by PHP.

`value` can also be set by `Default` pseudo type.

1.3.8 Image

`[I|IMG|Image` *`name`* `[`*`label`*`]` *`imageFile attribute(s)`*

`attribute(s)`:

- `Height` *`pixels`*
- `Title` *`title`*
- `Class` *`className`* default is `fg_Image`

If *`label`* is not present the image occupies all the row.

`imageFile` can be: *`imageFile`*|*`imageFile`*`:`*`Description`*|*`Description`*`:`*`imageFile`*

The possible *`description`* is shown before or after the image depending on its position.

```
Form frm 'Images' server echo.php call receive
I Img1 'El Condor' img/condor.gif title 'El condor pasa'
I Img2 'img/SanMichele.png:Sacra di San Michele' class
fg_Frame
CSS
.fg_Frame {
  border: 2px solid silver;
  margin: 5px;
  box-shadow: 4px 4px silver;
  vertical-align:middle
}
```

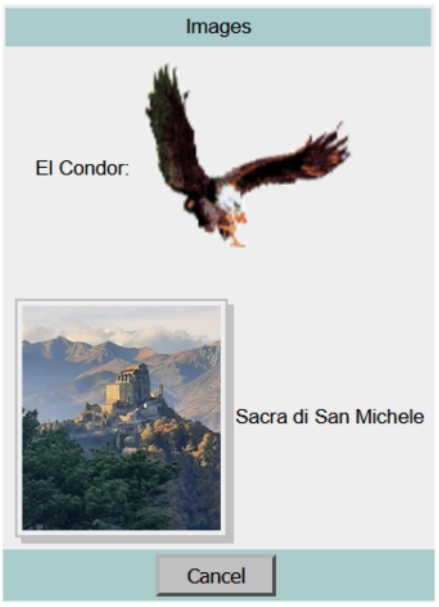


Figure 2: Form with images

1.3.9 Radio buttons

`R|RDB` *`name`* `[`*`label`*`]` *`buttons attribute(s)`*

`attribute(s)`:

- `Class` *`className`*
- `Event` *`eventType`* `...`
- `Title` *`title`*
- `Value|Default` *`value`*
- `Vertical` buttons are arranged vertically

The *`buttons`* field contains the labels and value of each radio button separated by commas. To obtain a key instead of the label, the item must have the form: *`key`*`=value`.

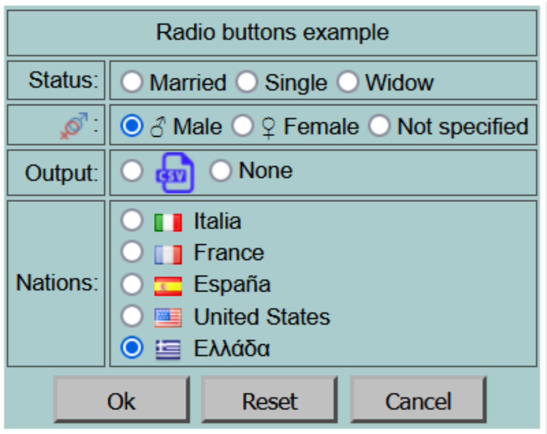
```
     Rdb Status '' M=Married,S=Single,W=Widow
```

The set of items can be enclosed in `'` or `"` if it contains spaces:

Example 3: Radio buttons example

```
CSS .fg_Table,.fg_Title,.fg_Buttons
{background:#acc}
CSS .fg_Table td, .fg_Table th {border: 1px
solid #444}
Form rdb 'Radio buttons example' server
echo.php call receive
R Status ''  M=Married,S=Single,W=Widow
R Sex 'images/sex.png'  'M=&#9794;
```

```
Male,F=&#9792; Female,N=Not specified'
R Output ''  E=images/excel.png,None
R Nations '' 'It=images/its.png
Italia,Fr=images/frs.png
France,Es=images/ess.png
España,Us=images/uss.png United
States,El=images/els.png Ελλάδα' vertical
Defaults Nations=El Sex=M
```


Radio buttons example

Status:	○ Married ○ Single ○ Widow
:	● ♂ Male ○ ♀ Female ○ Not specified
Output:	○ ○ None
Nations:	○ Italia ○ France ○ España ○ United States ● Ελλάδα

Figure 3: Radio buttons with images

☞ The `value`(s) fields can contain images, the file name must be separated by space; the image can be `.bmp`,`.gif`, `.png`, `.jpg`, `.ico` or `.jpeg`.

If no radio Buttons are checked the value exists and is the empty string. It is possible to have more than one set of radio buttons in the form.

If there is only one radio buttons set in the form, this does not have buttons and it is exited when a button is selected; the form is erased (unless the form is static, see Form 1.4.6).

1.3.10 Slider

`S name label` *`attribute(s)`*

`attribute(s)`:

- `Class` *`className`*
- `Event` *`eventType`* `...`
- `From` *`value`* if omitted is `0`
- `Step` *`value`* if omitted is `(To - From)/100`
- `Title` *`title`*
- `To` *`value`* if omitted is `100`
- `value|Default` *`nn`*
- `width` *`nn`*`|150` pixels

Ex. `From -5 To 5 step 0.5`

The result can have decimals depending on the value of *`To`* `- From`.

1.3.11 Text fields

`T|Text name label` *`attribute(s)`*

`attribute(s)`:

- `accept|filter` *`filterList`* for input type **`file`** *`filterList`* `is the` value for the `accept`[2] attribute ex. `filter=image/*,.pdf`
- `col|cols` *`nn`*
- `disabled`
- `event` *`eventType`* `...`
- `file`
- `float` for floating numbers
- ~~`hex` for fields with hexadecimal values~~
- `hint` *`placeholder`*
- `integer` for numeric fields

[2] See https://developer.mozilla.org/en-US/docs/Web/HTML/Attributes/accept#unique_file_type_specifiers

- `password`
- `positive` for integer positive numeric fields
- `row|rows` *`nn`*
- `title` *`title`*
- `value|default` *`value`*
- `width` *`nn`*`|`<u>`20`</u> characters

☞ In local management all fields are of type `string`, use `toInt` or `toFloat` method if you want perform calculations.

`disabled` shows a not modifiable texts; note that the field is returned when the form is exited.

If the `width` exceeds 50 characters generated a text area `50 x Width/50`.

If `col` and/or *`rows`* is present is generated a text area `width|col x` *`rows`*.

The `hint` parameter sets a text hint (HTML5 `placeholder` property); ☞ if the length exceed the field width the `hint` becomes a title.

```
     T mediaFile '' File width 50 Filter audio/*,video/*,image/*
     T psFile 'PDF and PS files' File Width 50 Filter .pdf,.ps
```

☞ For control the maximum length of a file upload on PHP script, one can use a hidden field with name `MAX_FILE_SIZE` that must precede the file input field (see 1.3.7 Hidden field).

1.4 Pseudo types

1.4.1 Add style

`CSS` is a pseudo type that allows to add styling elements.

`CSS` *`stylingElements`*

`stylingElements` is added to a tag `style` tht is generated and appended to `document.head`.

```
CSS .fg_Table td, .fg_Table th {border: 1px solid #444}
CSS .fg_Table tr:nth-child(2n+1) {background-color:#eee;}
CSS .fg_Table tr:nth-child(2n+2) {background-color:#fff;}
```

1.4.2 Controls on data

`CONTROL` or `CHECK` allows to perform validity checks on fields:

```
CONTROL|CHECK fieldName control
        control := compOperator value|fieldName 'error signal'
        control := is mail|regularExpression 'error signal'
        control := call function 'error signal'
REQ|Required fieldName1[ fieldName2[ ...]]
```

Where *`fieldName`* is the name of the control subject to check; *`compOperator`* is a comparison operators.

The `mail` field **`is`** checked by regular expression **`^[a-zA-Z0-9._-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,3}$`**,

`function` is called with the form, the field name and the field value (see example below).

The field is valid if the control(s) executed is `True`; if there are multiple controls for the same field, they are considered in `and` condition; control aren't executed if the field is empty.

Some examples:

`Control e_mail is mail 'Incorrect mail form'`	field type is a mail address
`Control Password is '(?=.*\d)(?=.*[a-z]).{8,}' 'Almost eight character one numeric'`	at least 8 characters of which at least one is numeric
`Control positiveNumber >= 0 'Number must be greater -1'`	numeric field positive

```
Control Min < Max 'Minimum must be less of Maximum'
```

Example 4: Function that controls fields

```
...
T Qty 'Stock Quantity' positive
T wQty 'Quantity withdrawn'
Check wQty call controlWhithdraw 'excess quantity'
...
function controlWhithdraw(frm,field,value) {// check Quantity withdrawn
  if (value > parseFloat(frm["Qty"].value)) return false;
  return true;
}
```

1.4.3 Defaults

The type `Default[s]` is used for populates the form; the syntax is:

`Default[s]` *`ctrlName=value`*`[` *`ctrlName=value`*`[ ...]]`

- For list, combo box and radio button the *`value`* must be the key.
- The values constant, like `on`, `today` etc., are case insensitive.
- For Date type the format must be *`yyyy-mm-dd`*; it is also accepted `today`.
- If the value contains space(s) the couple *`ctrlName=value`* must be delimited by single or double quotes.

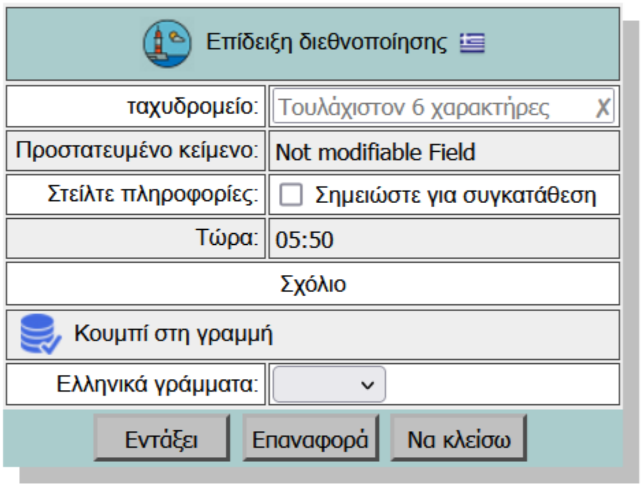
When the `Reset` button is pushed the form is restored with the default values.

1.4.4 Dictionary

`Dict[ionary]` *`dictionaryObject`*`|From` *`function`*

The `Dict[ionary]` pseudo type is intended for form internationalization. *`dictionaryObject`* is a set of `key value` items where the `key` is the word or phrase contained in the control list and the `value` is the translation.
The translation is applied to:

- button's caption,
- comments
- extra field of check box and texts.
- form title,
- hints,
- labels,
- radio buttons and combo box exposed values (not the key if it differs from the exposed value).



Επίδειξη διεθνοποίησης

ταχυδρομείο:	Τουλάχιστον 6 χαρακτήρες
Προστατευμένο κείμενο:	Not modifiable Field
Στείλτε πληροφορίες:	☐ Σημειώστε για συγκατάθεση
Τώρα:	05:50

Σχόλιο

Κουμπί στη γραμμή

Ελληνικά γράμματα:

Εντάξει Επαναφορά Να κλείσω

Figure 4: Internationalization and table decoration

☞ The translation is not applied to the default values.
☞ *`dictionaryObject`* must be a global variable.
The dictionary is contained in the static variable `fg_dictionary` of `fGen` class, This allows you to indicate the dictionary only at the beginning of the application and possibly change it, if required.

```
HTML
...
```

HTML

```
<img src="img/its.png" class="imgbtn" onclick="changeLang('IT')"
title="Italiano">
<img src="img/frs.png" class="imgbtn" onclick="changeLang('FR')"
title="Français">
<img src="img/ess.png" class="imgbtn" onclick="changeLang('ES')"
title="Español">
<img src="img/uss.png" class="imgbtn" onclick="changeLang('EN')"
title="English">
<img src="img/els.png" class="imgbtn" onclick="changeLang('EL')"
title="Ελληνικός">
...
```

Control list

```
Form ft 'images/faro.ico Demo internationalization images/its.png' server
echo.php call receive
Dict dict
T Mail Mail address ''  hint 'Minimum 6 characters'
T Protect 'Protected text' value 'Not modifiable Field' disabled
CKB CheckBox 'Send info' 'Check for consent'
T Time '' disabled
C Comment Comment center
B Save images/update.png 'inline=In line button' Event click alert 'Not saved,
only for demo'
GET Time getSample.php?Type=Time
CMB Hellas 'Greek letters' Alfa,Beta,Delta,Epsilon,Gamma
```

JavaScript

```
function changeLang(Lang) {
   dict = {}
   for (w in dictionary) {
     if (typeof dictionary[w][Lang] != "undefined")
           dict[w] = dictionary[w][Lang];
   }
   var form = "Form ft "+"images/faro.ico Demo internationalization:"
     +changeLang.Flags[Lang]
     +" server echo.php call receiveData/nDict dict"
     +formTrans
     if($("fg_PopUp")) $("fg_PopUp").remove();
     Fgen = new formGen("",form)
     var link = $("fg_PopUp")
     link.style.top = 0.5 * (window.innerHeight - link.offsetHeight);
     link.style.left = 0.5 * (window.innerWidth - link.offsetWidth);
     $("ftfg_Title").classList.add("fg_Movable")
     $("ftfg_Title").addEventListener("mousedown", dragStart.bind(null, event,
"fg_PopUp"))
}
changeLang["Flags"] = {IT:"images/its.png",FR:"images/frs.png",
              ES:"images/ess.png",EL:"images/els.png",EN:"images/uss.png"}
```

Dictionary

```
var dictionary = {"Mail address":{IT: "Indirizzo di posta",
            FR:"Adresse e-mail",EL:"Ταχυδρομική διεύθυνση"},
            Mail:{IT:"Posta elettronica",FR:"Courrier",
            ES:"Correo",EL:"ταχυδρομείο"},
...
            Reset:{IT:"Ripristina",FR:"Réinitialiser",ES:"Reiniciar",
                   EL:"Επαναφορά"},
            Cancel:{IT:"Chiudere",FR:"Fermer",ES:"Cerrar",EL:"Να κλείσω"},
            Ok:{ES:"Okay",FR:"Bien",EL:"Εντάξει"}
            }
```

1.4.5 Event

This pseudo type `Event` is used to attach an event handler to a field:
`event` *`eventType`*`|enter on` *`fieldName`* `submit|`*`Attributes`*
`Attributes`

- `call` *`jsAndParm`* `|alert` *`text`*
- `server` *`URI`* submit|`call` *`jsAndParm`*`|alert|set` *`fieldName`*`|`*`ID`*

`jsAndParm := javaScriptFuntion|'javaScriptFuntion parameter'`

Event type `enter` can be associated to a text field, normally for manage the `enter` key (because it has been disabled by *FormGen)*; this event is an effect a `keydown` event.

*`eventType`*s are the events accepted by `addEventListener` function.

`submit` invokes the form submission.

`server` *`URI`* calls, via *ajax*, a *`serverFunction`* (for example a `PHP` script) passing him the form; the response is passed to *`JavaScriptFunction`* with possibly *`parameter`* or alerted or, in case of `set` *`fieldName`*`|`*`ID`* *formGen* treat the response as follows:

- an `IMG` tag: the result is entered in the `SRC` property,
- an `INPUT` tag: the result is entered in the `VALUE` property,
- a `SELECT` tag: the result, that must have the structure of the *extra* field of combo type, is inserted as options,
- else the result is entered in the `innerHTML` property.

☞ If an event is associated to a set of radio buttons, each of them will reacts.

```
Form fe 'Submit on Enter or Select' server echo.php call receive
T Name ''
Event Enter on Name Submit
T Qty Quantity positive
```

Example 5: Event, Get and createOptions function

```
...
<div id='result'></div>
<div id='result2'></div>
...
<script type='text/javascript'>
var eventFrm = "CMB Images"
      + "\nRdb imageType '' .gif,.jpg,.png"
      + "\nB fg_Cancel &#x2718"
      + "\nB ShowCite images/new.png inline 'Show IT quote'"
      + "\nEvent click on ShowCite server getITCite.php set result2"
      + "\nDefaults imageType .png"
      + "\nGet Images getSample.php?Type=Images&imageType=.png"
      + "\nEvent click on imageType call getImageList"
      + "\nEvent change on Images call showImage result2";
Fgen = new fGen("result",eventFrm);
function getImageList(btn) {
      const frm = $(btn).form;
      const url = "getSample.php?Type=Images&imageType=" + event.target.value;
      fGen.prototype.ajax(url,"",c => frm.fg_createOptions("Images",c))
}
function showImage(field,div) {
  $(div).innerHTML = "<img src='images/" + event.target.value + "'>";
}
</script>
```

1.4.6 Form

The type Form is used to tell how the form is treated when it is submitted; the syntax is.

`Form` *`name title`* `[`*`Attribute(s)`*`]`

`Attribute(s)`:

- `call` *`javascriptFunction`* ☞ the argument of function is the form
- `class` *`className`* ☞ the class is associated with the title
- `ground` *`CSSBackground`* default is transparent (`rgba(0,0,0,0)`)
- `left` *`pixel`*`|-1` default `-1`
- `onStart` *`javascriptFunction`*
- `reset`
- `server server`*`Function`*
- `static`
- `target _blank|_self|_parent|_top|`*`frameName`*
- `top` *`pixel`*`|-1` default `-1`

`name` is the ID assigned to the form, if it is omitted the ID is `fg_Form`*`n`*.
`title` is displayed, if present, above the controls; *`title`* can contain images (`.bmp`, `.gif`, `.png`, `.jpg`, `.ico` or `.jpeg`):

```
Form ft 'images/faro.ico "Demo internationalization" images/els.png' server
echo.php call receive
```

☞ the image file names must be separated from the text by space(s) and this must be enclosed by quotes if it is subject to translation.
`server`*`Function`* is the server script which receive the form (via `submit` or `ajax`), if it is not present the form is not submitted and *`javascriptFunction`*, if present, is called with the form as argument.
`reset` restore the form after submission (like the `Reset` button)~~,~~
The `static` a `Cancel` button isn't generated.

☞ The form is erased by `Cancel` button. The form is cleared if has the `reset` parameter.

Before the submission the data are controlled as indicated in the pseudo type `Check` (if it exists), in case of error(s) the form is not submitted and the field(s) in error are bordered in red; it is also generated an alert.

Submission type	**uri**	**function**	**Note**
Form submission	required	empty	a new page is generated.
Ajax	required	required	The *`function`* receives the answer from *`uri`*.
Local	empty	required	The *`function`* receives the form.

Local	empty	empty	Shows a table of data.

Table 2: Form parameters and data management

1.4.7 Get

The pseudo type **`GET`** can be used for retrieve data from Internet via Ajax for set defaults values or populate lists and combo boxes or to periodically update comments, texts or images:

```
GET *|name URI [every milliseconds]
```

if `every` is present, `URI` is called every `milliseconds` and the widget `name` is updated; ☞ this happens only if `milliseconds` are greater of `99`.

`URI` is an Internet function that provides the data that are treated depending on the request:

- if `*` the program expects the data in the format provided by the pseudo-type `DEFAULTS` (this is useful for example for populate a form by a Data Base fields);
- if `name` is a name of one form field of type:
  - `IMG` the result is entered in the `SRC` property,
  - `INPUT` (texts and lists) the result is entered in the `VALUE` property,
  - `SELECT` if the result has the structure expected for the list of options it is inserted as options, otherwise is set as value,
  - else the result is entered in the `innerHTML` property.

The optional *query* component of the `URI` (preceded by a question mark `?`), contains data that depend on the protocol of the script receiving the request (see example below).

☞ The defaults of Combos, Lists and Radio buttons, unlike the case of pseudo-type **`DEFAULTS`**, is accepted only the value of the key.

Example 6: PHP script for periodic update image

```
Form frm '' server echo.php call
receiveData
I Img '' height 200 comment
Get Image getImage.php every 11000
```

```
<?php
$images = array(
	["Rabbit lake","images/RabbitLake.jpg"],
	["Bukavu - DR Congo","images/Bukavu.png"],
	["Brousse on Burkina","images/Burkina.png"],
	["Mount Olympus","images/Olimpo.jpg"],
	["Conte Verde","images/ConteVerde.jpg"]);
if (!isset($_COOKIE['imgCount'])) {
	$count = 0;
} else {
	$count = $_COOKIE['imgCount'];
}
setcookie("imgCount", (($count+1) % count($images)));
echo $images[$count][1]."\t".$images[$count][0];
?>
```

Example 7: Obtain data via Get pseudo type

Form Parameters

```
Form frmg2 'Get example' server echo.php call receive
T Time '' disabled
T Widget '' disabled
T piGreco '' value 3.14159 float disabled
CMB WidgetType '' '' link Widget group
CMB Hellas 'Greek letters' multiple
List Town
CMB Languages
Hidden HiddenField
B fg_Ok &#x270E; width 45
```

```
        B fg_Cancel &#x2718; width 45 'title=Cancel Form'
        B fg_Reset &#x21B6; width 45 'title=Reset Form'
        Get * getSample.php?Type=Defaults
        Get WidgetType getSample.php?Type=Type
        Get Town getSample.php?Type=Towns
        Get Hellas getSample.php?Type=Hellas
        GET Time getSample.php?Type=Time
        GET Languages getSample.php?Type=Lang
```

Example 8: PHP script for GET command

PHP script

```
<?PHP
$type = $_REQUEST["Type"];
if ($type == "Type") {
       echo "=Buttons,B=Button,R=Radio button,R vertical=Vertical Radio
button,"
       ."=Lists,CMB=Combo box,L=List,"
       ."=Texts,C=Comment,T file=File,H=Hidden field,T Positive=Numeric,T
integer=Numeric signed,"
       ."T float=Numeric with decimals,T password=Password,T=Text,T
readonly=Read only text,"
       ."=Others,CKB=Check box,S=Slider";
}
if ($type == "Hellas") {echo "Alfa,Beta,Delta,Gamma,Epsilon";}
else if ($type == "Towns") {echo
"London,Paris,Rome,Toulon,Toulouse,Turin,Zurich";}
else if ($type == "Defaults") {echo "Town=Turin Hellas=Alfa 'WidgetType=T
file' Languages=Pascal 'HiddenField=El Condor'";}
else if ($type == "Lang") {echo "Algol,Cobol,Fortran,JavaScript,Pascal,PHP";}
else if ($type == "Time") {date_default_timezone_set("Europe/Rome");echo
date("h:i");}
?>
```

1.4.8 Required

`Req[uired]` *`fieldsList`*

Example: `Required Mail Measure`

1.4.9 Tab

`Tab` *`name caption`* `[`*`title`*`]`

The Tab pseudo type permits the creation of Tabs; here below the structure schema of the control list.

Control list structure	Presentation	Table structure
Common widgets Tab *Tab$_1$* *Tab$_1$ widgets* ... Tab *Tab$_n$* *Tab$_n$ widgets*	Title	thead
	Common widgets	tbody
	Tabs navigator	tbody
	Tabs container	
	Common buttons	tfoot

Table 3: Tab structure

The widgets before the first Tab are commons to all `Tab`s.

Every `Tab` has a `Reset` button and the possibly buttons contained in the *`Tab widgets`*.

1.5 Data presentation

The data are presented in the order they appears in the parameters list unless they are expressly placed `after` or `below` another field; the buttons appears together the buttons inserted by *FormGen* at the bottom of the form if not assigned `after` or `below` another field.

The buttons inserted automatically (*standard buttons*) are `Ok`, `Cancel` and `Reset`, they have the name respectively `fg_Ok`, `fg_Cancel` and `fg_Reset`, their presence depends on the controls contained in the form:

- there are no buttons if there is only one from Combo box, Radio buttons set, Text field or Date field,

otherwise:

- the `Cancel` button is present if the form is not declared `static`,
- the `Reset` button is present if there are data fields (e.g. Type **`Text`**, **`R`**, **`CHK`**, **`CMB`**, **`Slider`**, etc.),
- the `Ok` button is not present if there are buttons (type **B**) not associated to a field i.e. by `After` or `Below` parameters.

The form is displayed using a `table` tag which has a class name `fg_Table`, the buttons have `fg_Button` or `fg_GButton` or `fg_CButton` class respectively for buttons with text or buttons with image or one character caption. The field labels have class name `fg_Label`; the possibly title has class name `fg_Title`.
In the form there are some embedded styles:

```
.fg_Buttons {text-align:center;padding:3px 0}
.fg_Error {color:red}
.fg_Number {text-align:right;margin-right:12px}
.fg_Erase {color:#888;margin-left:-12px}
.fg_See {margin-left:6px;font-size:20px}
.fg_ButtonTab {border-top-right-radius:15px;height:30px;
min-width:80px;border:1px solid #000;padding:5px;border-bottom:none}
.fg_Button,.fg_ButtonTab,.fg_Erase,.fg_See,.fg_CButton,.fg_GButton
{cursor:pointer}
.fg_CButton {border:none;background:rgba(0,0,0,0);font-size:18px}
.fg_Button:disabled, .fg_GButton:disabled, .fg_CButton:disabled{cursor: not-
allowed;}
.fg_GButton {border:none;background:none}
.fg_Slider {width:3em;padding-left: 4px;border:none;background:rgba(0,0,0,0)}
.fg_UType {border:none;background:rgba(0,0,0,0)}
.fg_alignImg {padding: 0 3px;vertical-align:middle;}
.fg_Table td {padding:3px 2px}
.fg_alignAfter {display: grid;grid-template-columns: max-content
repeat(3,1rem);align-items: center;}
```

Note that those styles can be overridden by setting `!important` to the style, for example for change the color of the erase marker the CSS can be: `.fg_Erase {color:blue !important;}`

The presentation can be manipulated using style sheets.

1.5.1 Form container

If the form container doesn't exists or is not indicated the form is build in a `div` with `id` `fg_PopUp`*`n`* and class name `fg_PopUp`, see parag. 1.5.3 Movable forms.

1.5.2 Buttons

For change the caption of `Ok` or `Reset` or `Cancel` button the syntax is:

```
    B,[fg_Cancel|fg_Reset|fg_Ok],newCaption;
```

The Unicode characters are a simple and efficient means to create buttons with pictures:

```
B fg_Cancel &#x2718;
B fg_Reset &#x21B6;
B Start &#x270E; Event click Call
myHandler
```

The Ok button is replaced if there is almost one type Button in the list not associated, by `AFTER` or `BELOW` pseudo type, to some control.

The default order of buttons is `Ok`, `Reset` and `Cancel;` when they are explicitly indicated the order is the one in which they are in the list.

☞ if the button caption is of one character, possibly written in UNICODE notation, the button has no border and no background, this is no the case if the character is a HTML Entities.

Table 4: Some UNICODE characters

Name	Symbol	PHP Code	HTML Entities	JavaScript UNICODE
edit	✎	`\270E`	`&#x270E;`	`\x270E`
delete	✘	`\2718`	`&#x2718;`	`\x2718`
check	✓	`\2713`	`&#x2713;`	`\x2713`
check bold	✔	`\2714`	`&#x2714;`	`\x2714`
email	✉	`\2709`	`&#x2709;`	`\x2709`
cross	✖	`\2716`	`&#x2716;`	`\x2716`
dollar	$	`\0024`	`&#x24;`	`\x24`
euro	€	`\20AC`	`&#x20AC;`	`\x20AC`
pound	£	`\00A3`	`&#xA3;`	`\xA3`
white square	▢	`\25A2`	`&#x25a2;`	`\x25a2`
ballot box		`\2610`	`&#x2610;`	`\x2610`
ballot box with check	☑	`\2611`	`&#x2611;`	`\x2611`
Eye	👁	`\1F441`	`&#x1F441;`	`\x1F441`

1.5.3 Movable forms

```
.fg_PopUp {
     background:#E0E0E0;
     box-shadow:10px 10px #BFBFBF;
     width: auto;
     height: auto;
     position: absolute;
}
```

In the *SandBox* there is an example of movable form (and internationalization).

This is achieved through a form generated without indicating the creation tag or indicating a non-existent tag, so *FormGen* generate a `div` tag with class `fg_PopUp`; ☞ the form must have the `form` pseudo type with `title` (the third parameter) in order to be generate a title row that is the area for the moving.

Example 9: Movable form

Widget List

```
form = "Form ft 'Try Sand Box' echo.php receive"
       + "\nT Text1 'Text 1' hint 'place holder'"
       + "\nRDB vRdb2 'vRdb 2' North,South,West,East vertical"
...
```

JS Form creation

```
if($("fg_PopUp")) $("fg_PopUp").remove();
Fgen = new fGen("",form)
...
```

CCS

```
.fg_PopUp {
      background:#E0E0E0;
      box-shadow:10px 10px #BFBFBF;
      max-width: fit-content;
      position: absolute;
}
.fg_PopUp .fg_Title {cursor:move}
```

1.6 Controls and form submission

Form data are sent when the `Ok` button is pressed (or his substitute) and there aren't errors.
The `check(form)` function execute the required controls on fields; possibly multiple controls for the same field are in `and` condition. The errors are alerted.

Data are sent depending on the type of submission required (see Table 2: Form parameters and data management). If the script in the Web Server is a PHP script, data are in the global variable `$_REQUEST`, and `$_FILES` in case of file upload. In the case of local treatment data are properties of the form and can be accessed by the syntax:

```
document.getElementById(form).ctrlName.value
```

Where `form` is the name chosen in the `Form` pseudo-type and *`ctrlName`* is the name of the control.

Moreover the form has also some other fields:

- `fg_Button` contains the name of the button which has submitted the form or, in case of single combo, list or radio, the name of the field, ☞ in case of `event enter` is the name of the field;
- `fg_Changed` contains the list of fields changed. ☞ This is achieved by comparing the initial content of the form (including default values) and the submitted form.
- `fg_TimeStamp` contains the browser date and time in the form: `YYYY-MM-DD HH:MM:SS`.

☞ The value returned of check box is present only if it is checked and his value is `on`; the fields `disabled` aren't returned, instead the fields `readOnly` are returned; the combo box aren't returned if there aren't be any choice.

The function `fg_handle(form,buttonName)` is invoked when a button is clicked; this function invoke the `check(form)` function for execute the required controls on fields and it returns a possibly array of errors.

The `Cancel` button clears the form container; the `Reset` button cleans the form and restores the defaults values.

For others buttons not `After` or `Below` a field, if doesn't contains a custom function to handle the event, the behavior is like an `Ok` button.

1.6.1 URI

The form is submitted to a server, by `Ok` button, the `Cancel` button doesn't submit; the form is erased unless it has been declared `static`, however the `Cancel` button always erase the form.

1.6.2 Function

The function is called with the form as parameter after a possibly positive check; in case of `Cancel` button the form has only the field `fg_Button`; the form is erased unless it has been declared `static`.

1.6.3 URI and function

The URI is treated as an *ajax* requests and the JavaScript function receive the response from the WEB server. In case of `Cancel` button the form has only the field `fg_Button`; the form is erased unless it has been declared `static`.

1.6.4 No URI and no function

The data replace the form. In case of `Cancel` button the form has only the field `fg_Button`; the form is erased unless it has been declared `static`.
☞ No URI and no function is the case also when the form is submitted by a custom function (see the above paragraph).

1.6.5 Custom management of form

The function of the customer is invoked whit the button as argument:

- the form is accessed by: `const frm = $(button).form`

- the possibly controls: `var aErrors = frm.fg_check(frm);`
  - return in case of error detected: `{alert("Errors:\n"+aErrors.join("\n"));`**`return;`**`}`
- the form can be submitted, provided the `form` pseudo type has the server parameter: `frm.submit()`

Example 10: Custom form control and submission

```
Form form 'Example Form'
T Text '' width 30 hint 'Text placeholder'
S Slider '' From 34 To 43 step 0.1
T psw Password Password width 25 title 'Insert password'
T graphFile '' File filter .gif,.jpg,.png
Control psw is (?=.*\d)(?=.*[A-Z])(?=.*[a-z]).{6,12} 'Almost one Uppercase,
Lowercase and digit\x0d from 6 to 12 characters'
B Start &#x270E; width 40 event click call 'myHandler echo.php'
Defaults Slider=37.55 psw=Corkone6
Required graphFile
...
function myHandler(button,URI) {    // can be called with button or form
      if (typeof button == "string") {
            var frm = $(button).form
            var aErrors = frm.fg_check(frm);
            if (aErrors.length > 0) {alert("Errors:
\n"+aErrors.join("\n"));return;}
      } else frm = button
      frm.fg_formFields(frm)  // set list of widgets changed
      frm.encoding = "multipart/form-data";
      frm.target = "_blank";
      if(URI != "") frm.action = URI
      frm.submit();
      $("result").innerHTML = "The form has been erased in myHandler function";
      frm.remove()
}
```

1.6.6 Form with one control

If the form contains only one input field the form is submitted when the field is compiled or selected, it may contain, however, images and/or comments:

```
Form frm '' server echo.php call receive
I Image_2 'images/SagraSanMichele.png:Sacra di San Michele' class fg_Frame
RDB Agree '' Low,Medium,High
```

Table 5: Events on one field form

Type	Event(s)	Note
`Combo (CMB)`	`change`	
`Date`	`change`	
`List (L)`	`change` `keydown`	`keydown` exits on Enter key
`Radiobutton`	`change`	
`Text`	`keydown`	exits on Enter key

`Text file`	`change`	☞ this works only if the form is sent via Ajax:
		`Form frm 'Upload .png file' server echo.php call receive`
		`T .pngFile '' file accept .png`

1.7 Events

A form is created with some events added depending on the control:

- Event `change`:
  - sliders: display a value of slider,
  - for solitary combo box, radio, Date, File field and list.
- Event `click`:
  - on buttons for submit, cancel and reset the form,
  - on the undo mark (✘) on the right in the text fields to clear its contents,
  - on eye icon of password fields.
- Event `keyup`:
  - for manage numeric fields,
- Event `keydown`:
  - for capture the Enter key for form submission,
  - for solitary list to intercept the Enter key.

Moreover events can be added by the `Event` pseudo type or by JavaScript `addEventListener` method:

Example 11: Enable button on event

```
JS      $("result").innerHTML = $("agree").innerHTML;
        Fgen = new fGen("result");
        $("Agree").addEventListener("click",function() {$('Start').disabled = !
        this.checked;},true);

HTML    <span id='agree' style='visibility:hidden'>
        CKB Agree 'Consent cookies?' 'I agree' width 10
        B Start
        Defaults Start=Off
        </span>
        <span id=result></span>
```

☞ Note that `ID`s are formed by the form name and the field name, in the example above there is no `Form` pseudo type although the form is generated with id = `fg_Form`*n*.
☞ for Radio buttons the `id`*s* are *`formIDname`*$_0$, *`formIDname`*$_1$ …

Example 12: Use of event pseudo type

```
setDecimals = function() {
      if ($("frmXsource").value.indexOf("%") > 0) $("frmXdecimals").value = 2;
      else $("frmXdecimals").value = 0;
}
var parmXData = "Form frmX 'Cross Data' server call_crossdata.php call show static"
      + "\nCMB source '' CROSS Product BY Town % ROWS Qty FROM orders,"
      + "CROSS Product BY Town Qty FROM orders,"
      + "CROSS Product BY Seller % SUM Sold FROM orders,"
      + "CROSS Product BY Seller FROM orders"
      + "\nH decimals '' value 0"
      + "\nEvent change on source call setDecimals"
Fgen = new fGen("formCross",parmXData);
```

1.7.1 Button Events

This paragraph deals on not submit buttons i.e. the buttons that are `AFTER` or `BELOW` a form field.
The behavior is influenced by the presence or absence of the `Event` parameter i.e. without `Event` the buttons acts as submit button; with `Call` or `Server` parameter the main cases are (see parag. 1.4.5 Event):

- only `Server` *`URI URI`* is submitted via Ajax without response.

- `Server` *`URI`* and `Call` *`function`* the answer of the server is managed by the JavaScript *`function`*.
- Only `Call` *`function`* the *`function`* receive the button id and a possible parameter; note that in the JavaScript function it is possible call the server via Ajax, see the example below.

Example 13: Call a function that call Ajax

```
Form '' 'Call function example'
B GB1 'images/info.png' inline Quote click call 'showITCite 15'
C quote &nbsp; width 300
...
function showITCite(btn,n,form) {
     fGen.prototype.ajax("getITCite.php?n=" + n, form,
            function(c){$("quote").innerHTML = c})
}
```

1.7.2 Handle events functions

The pseudo type **Event** allows you to assign to a field both the script server and the JavaScript that will process the response, moreover, if instead of the JavaScript function is indicated an element of the DOM, this will receive the server data (see parag. 1.4.5 Event).
The function has this signature:

`functionName``(`*`fieldID`*`[,`*`parm`*`],`*`form`*`)`

`fieldID` is the `ID` of the object that generated the event.

Example:

```
Form frm
CMB Sensors
...
function retrieveSensor() {
      alert($("frmSensors_Group").value + " " + event.target.value)
}
...
$("frmSensors").addEventListener("change",retrieveSensor,true);
```

Example 14 Adds `change` event to a combo box and `enter` to a text input

```
Form fe 'Submit on Enter or Select' server echo.php call receive
T Name '' Event Enter Submit
CMB Category '' '=Anti,Antibiotic,Anti-inflammatory,=Others,Beta-
blocker,Cardiovascular,Dermatological,Endocrine,Gastroenterological,Gynecologic
al,Neurological,Respiratory,Restorative' Event change Submit
```

1.8 Errors

1.8.1 Alerted errors

`Error:` *`ajax.status`*`:` *`ajax.statusText`*	when the form is submitted

1.8.2 Errors reported as comments

`Unknown type:` *`fieldType`*	Field or pseudo unknown
`function` `isn't a function`	Form call function
`ID` `the form ID exists!`	Form name coincide with an existent ID

1.8.3 Console logged errors

`Ajax timeout after` *`nnn`*`ms`	Server not responding
`Default value` *`value`* `for` *`combo`* `not in list`	Combo box defaults
`fieldName` `not exists`	Pseudo type `Control`
`fieldName` `field ID not present`	Pseudo type `Event`
`function` `isn't a function`	Pseudo type `Event`
`fieldName` `get field not present`	Pseudo type `Get`
`Field` *`fieldName`* `or id nonexistent`	Event Set parameter

1.9 Some functions

`fGen` contains some functions in the object prototype or are referenced as form property or declared static:

- Call prototype functions
  - `fGen.prototype.`*`functionName`*`(...)`
  - *`fGenObj.functionName`*`(…)` where *`fGenObj`* is the name of the object `fGen` instantiate
- Call functions accessible from the form
  - *`fGenObj.functionName`*`(...)` where *`fGenObj`* is the name of the object `fGen` instantiate
- Call static functions
  - `fGen.`*`functionName`*`(...)`

1.9.1 Prototype functions

1.9.1.1 Ajax

`fGen.prototype.ajax(`*`url`*`,`*`frm`*`|`*`inlineParameter`*`(`*`s`*`),`*`handler`*`|`*`ID`*`[,`*`parameter(s)`*`])`

Used internally for submit the form; *`handler`* is the function or the field which receives the answer.

examples:

1. `fGen.prototype.ajax("getjson.php?getData,"",function(c){alert(c)})`
2. `fGen.prototype.ajax("FaRo_ajax.php?fnz=drugsList",frm,"Right")`
3. `fGen.prototype.ajax("FaRo_ajax.php","fnz=seeNames&limit=15&Name=" + x.value,function(c) {fGen.prototype.createOptions("Names",c)})`

☞ In the first example the data is in the *`url`*, in the second data are both in the form `frm` both in *`url`* and the result is put in the DOM element with ID `Right`.
`frm` can be a form or a string).

`handler` function is invoked with parameter: the response, the invoking form and the possible one or two *`parameter(s)`*.

1.9.1.2 Show data

`fGen.prototype.showData(`*`data`*`)`

`data` is a key/value object.
Creates a table (class `fg_Table`) with ordered data of the form.

1.9.1.3 Get data from form

The form data are obtained:

```
data = fg_formFields(form)
```

`data` is a hash table of data of form; the key is the control name, it contains all fields including those not submitted in submission (like check box not checked).

`form` can be the ID or the form itself

```
formGen = new fGen(containerID,"Form frm '...")
...
```

```
    var data = formGen.showData(frm.fg_formFields ("frm"))
```

1.9.2 Object functions

1.9.2.1 Change the contents of combo box

The function `fg_createOptions` permits to populate or replace a combo box list contents.

```
    fg_createOptions(idComboName,newData)
ex. function changeMUnits(field) {
          const frm = $(field).form
          const newCombo = "=Time,s=Second,m=Minutes,H=Hour,Day,Month,Year"
          frm.fg_createOptions(frm.MeasureUnit.id,newCombo)
    }
```

1.9.2.2 Check the form data

The function `fg_check(form)` performs the control indicated by the pseudo types `Control` and `Required` returning an array of errors or an empty string; see *Example 10: Custom form control and submission*.

1.9.3 Static functions

These functions do not require the creation of the `fGen` object.

1.9.3.1 Create node

`Node = createNode(tagType,id[,style])`

Examples:
```
var span = fGen.createNode("span")
fGen.createNode("DIV",formID+"fg_GridData",'border: 1px solid #000')
```

1.9.3.2 Create widget

`createWidget(id,widgetList)`

This function allows the insertion of one row of widget(s); that is, a control with any controls after or below it.

☞ The `reset` button doesn't restore the widget added, the `id` is the widget name it doesn't contains the form id.

Example 15: Insertion and deletion of form elements

```
T Attachement '' File Event change call insertRow width 40
...
function insertRow(id) {
     insertRow.count++
     var list = `
B delete%n  \\x2718 call fGen.deleteWidget inline
T attach%n ' ' after delete%n disabled width 40 value '${$(id).files[0].name}'
`
     fGen.createWidget(id,list.replace(/%n/g,insertRow.count))
}
insertRow.count = 0;
```

1.9.3.3 Delete widget

`deleteWidget(id)`

1.9.3.4 Extract tokens

The function `fGen.extractTokens(s, delimiter)` generates an array of tokens from a character string where the tokens are separated by space(s) or delimited by quote or double quote if they contains spaces.
If `delimiter` is present and is `true` the tokens are returned with possibly string delimiters.

1.9.3.5 Is graphic file

`fGen.isGraphicFile(`*`fileName`*`)`

The function returns `true` if the file has one of those extension: `.png`, `.gif`, `.jpeg`, `.jpg`, `.ico`

1.9.3.6 Move an object on the screen

The function `fGen.dragStart` makes an object movable as long as it has the style `position:absolute`.
The function is the second parameter of the `addEventListener` function with event `mousedown` and must know the object Id, see the example below.

```
<div id='condor' style='position:absolute;cursor:move'>
...
</div>
...
$ = id => document.getElementById(id);
$("condor").addEventListener("mousedown", fGen.dragStart.bind(null,"condor"))
```

Example 16: Movable form

1.9.3.7 Position an object on the screen

`fGen.setObjPosition(`*`ID`*`, `*`top`*`, `*`left`*`)`

The HTML object is positioned as indicated by *`top`* and *`left`* values; if these are omitted the object is centered on the screen.

☞ The object must have in the style `position:absolute`.

1.9.3.8 Show image

`fGen.showImage(`*`ID`*`,`*`imageNameDescription`*`)`

`imageNameDescription` `:= imageFile|`*`imageFile:Description`*`|`*`Description:imageFile`*

`ID` must be an ID of an IMG tag.

The possible *`Description`* is inserted before or after the image provided there are a `previous` or `next` sibling tag.

1.9.3.9 TimeStamp

`fGen.timeStamp` returns the browser date and time in the form: `YYYY-MM-DD HH:MM:SS`

Ex. `fGen.prototype.timeStamp(new Date())`

1.10 Compatibility

`Date`, `List`	HTML 5	
`Get` pseudo type	Explorer 9	The function called by `setInterval` is not switch off when the form is erased.

1.11 Sandbox

The Sand Box is an application for demonstrate and try *FormGen*.
In particular it contains a `formgen.css` script for styling the forms and `form.js` that contains most of the control list of the demo.
Below are some scripts used.

Example 17: Echo.php

```
<?php
echo "<table border=1 cellpadding='5'>";
ksort($_REQUEST,SORT_STRING|SORT_FLAG_CASE);
foreach ($_REQUEST as $key => $value) {
      if (is_array($value)) $value = implode(", ",$value);
      echo "<tr><td style='text-align:right'>$key<td>$value";
}
```

```
foreach ($_FILES as $k => $fl) {
      echo "<tr><td colspan='2'>$k";
      foreach ($fl as $item => $value) {
            echo "<tr><td>$item<td>$value";
      }
}
echo "</table>";
?>
```

```
function receive(c) {
    $("result2").innerHTML = c;
}

function showData(field) {
    const form = $(field).form;
    var data = fGen.prototype.showData(form.fg_formFields(form))
    var parms = {cancel:"Click",top:-1,left:-1,"fade":"1000 1000",
    content:data+"<div style='text-align:center'><span
    class='fg_Erase'>&#x2718;</span></div>",
    style:"background:#eed;border:3px outset blue;padding:3px"};
    popUp(parms);
}
```

2 History

0.3.0 April 2024	• First release
0.3.1 August 2024	• Fixed loss of styles of static form • Removed (not signaled) incompatibility between widget names and Form tag properties, ex `id`, `method`
0.4.1 October 2024	• Eliminated GET for combo with one item setting default • Add parameter `row` to comment • Improved and corrected documentation • The possibly call to `onStart` function is now the last action of the form creation

3 Technical notes

3.1 Multiple forms

It is possible to have multiple forms provided that the controls have different names or, however to avoid name collision the field names has the form *formNamefieldName* where *formName* is the name of the pseudo type Form.

3.2 Generated ID classes and names

Note that ID are prefixed by *FormName* if exists.

Object	**ID**	**Class**	**Name**	**Note**
Form	*FormName*|fg_Form	fg_Form		fg_Form if the *FormName* was not provided
PopUp form		fg_PopUp		
Added fields			fg_Button	Contains the name of button pushed or the lonely widget
			fg_Changed	List of fields changed
			fg_TimeStamp	Timestamp of submission
Image		fg_Image		
Table		fg_Table		
	*FormName*fg_Title	fg_Title		if the form has title
		fg_Label		First td of every row
		fg_Buttons		Buttons' row
		fg_TabTitle		
Buttons	fg_Ok	fg_Button		Ok button
	fg_Cancel	fg_Button		Cancel button
	fg_Reset	fg_Button		Reset button
	buttonName	fg_Button		Generic button
	buttonName	fg_GButton		Image button
Combos, Lists	*ctrlName_Group*		*ctrlName_Group*	The possibly group name
	ctrlName_Exposed			The exposed value
Comments	*FormName*	fg_Comment		
Sliders	s_*SliderID*			Where the slide value is shown
	fg_*ctrlName*			Datalist
	fg_l_*ctrlName*			Input text of datalist
Text type		fg_UType		
		fg_Erase		✘ erase sign
		fg_TextArea		For Text Areas

3.3 Structures and variables

name	**content**	**key**	**value**
`aGets`	Get pseudo	`array`	See paragraph Get 1.4.7
`controls`		*`fieldName`*	`Array(`*`control`*`[=`*`value`*`],` `[`*`control`*`[=`*`value`*`]]...`
`errorArray`	fields errors		*`ctrlName`*`:` *`errorType`*
`events`	Custom events	*`fieldName`*	`Array(`*`event`*`,` *`function`*`,` `[`*`parameter`*`(s)])`
`jsForm`	Form data		Contains the properties: • `name` • `title` • `server` HTTP request to manage the form • `call` local function • `static` `1` static, `2` static and reset form • `target` • `typeForm` `F` if there is a File control • `formId` is the ID attributed to the form, is the form *`name`* or `fg_Form` if *`name`* is not present.

	Form added fields	`fg_check`
		`fg_createOptions`
		`fg_formFields`
		`fg_jsForm`
		`fg_setValue`
		`fg_widgets`
		`fg_CSS`
			Execute the controls required on fields
			Populate combo box

`widgets`	controls	*`fieldName`*	Can contain some properties: • `default` • `disabled` • `hint` • `inline` • `place After|Below` • `placevalue` • `type float|Integer|positive` • `width char or pixel`

4 Annexes

4.1 Introduction to regular expressions

A regular expression is a string of characters used to search, check, extract part of text in a text; it has a cryptic syntax and here there is a sketch with few examples.
The regular expression is contained between `//` and can be followed by modifiers such as **`i`** to ignore the case.
The expression is formed with the characters to search in the text and control characters, among the latter there is a `\` said *escape* used to introduce the control characters or categories of characters:

- **`\` escape character**, for special characters (for example asterisk) or categories of characters:
  - **`\w`** any alphabetical and numerical character, **`\W`** any non alphabetical and numerical character,
  - **`\s`** *white space* namely. tabulation, line feed, form feed, carriage return, and space,
  - **`\d`** any numeric digits, **`\D`** any non digit,
- `.` any character,
- **quantifiers**, they apply to the character(s) that precede:
  - **`*`** zero or more characters
  - **`+`** one or more characters
  - **`?`** zero or one character
  - **`{n}`**, **`{n,}`** and **`{n,m}`** respective exactly *n* characters, almost *n* characters and from *n* to *m* characters.

`(...)` what is between parentheses is memorized, (unless see line above)
`(?:...)` a non-capturing group,
`?=pattern` checks if `pattern` exists,
`[a-z]` any letter from `a` to `z` included,
`[a|b]` a or b,
`\b` word boundary,
`$` (at the bottom),
`^` (at start).

4.1.1 Regular expression examples

`^\s*$`	Empty set or white spaces
`(\w+)\s+(\w+)\s+(\w+)`	Find and memorize three words
`(\-[\W])`	Find and memorize `minus` followed by one alphabetic character
`.(jpg|jpeg)$`	Controls file type jpg or jpeg
`^[a-zA-Z0-9._-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,4}$`	Control of mail address
`^\d+$`	Only integers
`^[+-]?\d+$`	Signed integer
`^[+-]?(?:\d+|\d+\.\d+)$`	Floating point number
`((?=.*\d)(?=.*[a-z]+)(?=.*[\W]).{6,12})`	`(?=.*\d)` almost a digit from `0-9` `(?=.*[a-z])` almost one lowercase character `(?=.*[\W]+)` almost one special character `.` match anything with previous condition checking `{6,12}` length at least 8 characters and maximum 20
`^[-+]?\d{1,2}(\.\d{1,2})?$`	**Numeric values** `[-+]?` the sign is possible `\d{1,2}` one or two digits `(\.\d{1,2})?` It is possible to have a decimal point

	followed by one or two digits
`[0-9A-F]{1,5}`	Up to 5 hexadecimal digits (with case insensitive flag)
`(?=.*\d)(?=.*[A-Z])(?=.*[a-z]).{6,12}`	At most one digit, one capital letter, one minuscule and from 6 to 12 characters

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