

DbSchema Forms and Reports Tutorial

Main Features

DbSchema Forms and Reports features:

- Build for HTML, native Swing or PDF
- Coding with a modern Java –based scripting language : Groovy
- Can be deployed as stand-alone Tomcat war application
- Customizable HTML template mechanism
- Unlimited master/detail level
- Can build applications integrating input fields, buttons, charts, etc.
- Are the newest most innovative forms and reporting engine

We use the same engine for forms and reports; we make no distinction between them. In DbSchema a report is a form without input fields or buttons which will be executed as PDF or HTML.

DbSchema forms can be packed as a Tomcat war application and be deployed on a stand-alone server.

Purpose of this document

Read this tutorial to learn how to use DbSchema forms and reports. After this tutorial you will be able to build forms as below.

| FIRSTNAME | LASTNAME | GENDER | ADDRESS | POSTCODE | BIRTHDATE | PHONE | |
|-----------|----------|--------|---------------------------------|----------|------------|--------------|--|
| Stephen | Vasquez | m | 85 South White Oak Way | | 2017-04-24 | 269-473-4733 |  Edit |
| Abraham | Luna | f | 778 South Rocky Hague Freeway | 98984 | | 449-325-1064 |  Edit |
| Charlotte | Yates | f | 766 South Green Old Freeway | 13855 | 2014-12-20 | 741-673-9398 |  Edit |
| Lynn | Chandler | | 38 North Green Milton Road | | | 662-941-5482 |  Edit |
| Erich | Mayer | m | 745 East Green Hague Avenue | 80621 | 2018-07-28 | 673-416-4081 |  Edit |
| Dominick | Joseph | f | 63 West Green Clarendon Freeway | 52620 | 2019-11-16 | 530-791-8972 |  Edit |
| Cherie | Fowler | l | 29 North White Second Road | 44112 | 2012-04-13 | 635-239-7748 |  Edit |
| Ebony | Townsend | m | 47 East White Milton Way | 24280 | 2010-10-01 | 544-598-5933 |  Edit |
| Arthur | Ramsey | m | 35 South Green Second Freeway | 12959 | 2017-06-07 | 658-911-4759 |  Edit |
| Debra | Reeves | | 352 East Green Second Way | 34345 | 2019-06-30 | 361-764-0767 |  Edit |
| Lara | Logan | m | 865 East White Hague Boulevard | 63321 | 2010-04-22 | 454-728-8665 |  Edit |
| Shelley | Curry | l | 380 West Green Milton Drive | 36922 | 2016-11-30 | 879-751-0045 |  Edit |
| Otis | Tate | m | 856 East Green Cowley Drive | 71553 | 2018-07-08 | 713-366-1208 |  Edit |
| Rose | Reyes | l | 618 South Rocky Clarendon Way | 27297 | 2010-07-27 | 655-114-7147 |  Edit |
| Roxanne | Hale | f | 97 South White First Street | 14363 | 2014-01-31 | 737-113-8133 |  Edit |
| Kendall | Shelton | m | | 86759 | 2013-07-10 | 465-197-4126 |  Edit |
| Emily | Cobb | m | 27 South Rocky Nobel Road | 59566 | 2019-12-08 | 772-745-4177 |  Edit |
| Damien | Stout | f | 692 South Green Fabien Way | 16051 | 2015-08-15 | 474-347-9364 |  Edit |
| Owen | Meyer | | 952 East Rocky New Way | 36313 | 2014-10-05 | 144-261-8199 |  Edit |
| Jim | Turner | m | 48 West Rocky New Blvd. | 53874 | 2010-06-30 | 434-679-3496 |  Edit |

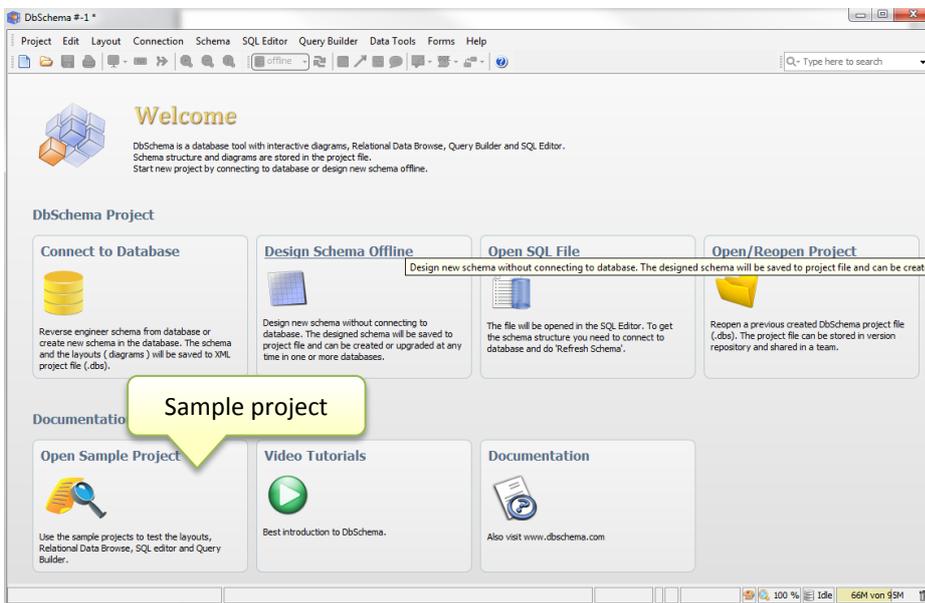
Page 0  Add

And a pop-up dialog :

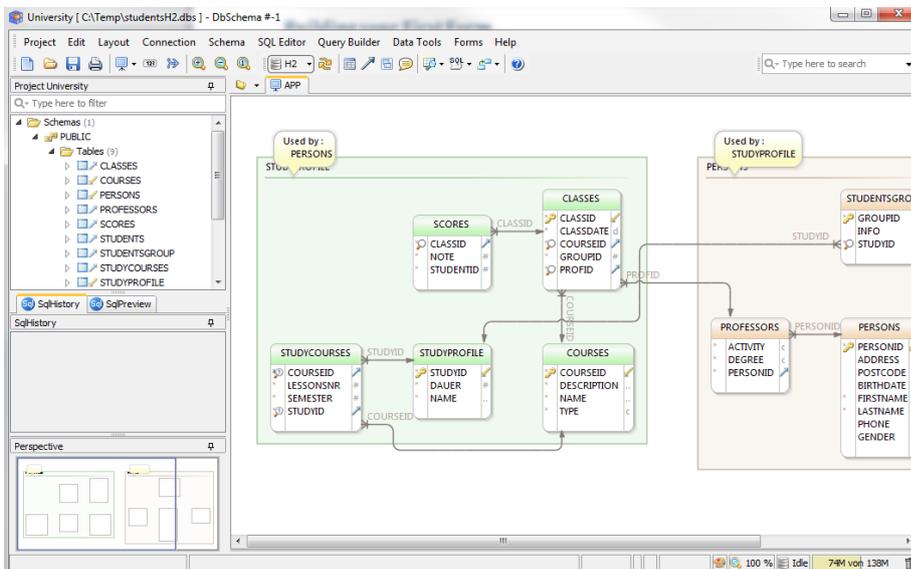
Dialog box titled "Edit Person" with input fields for "Firstname" and "Lastname" and a "Save" button.

Design using Wizard the First Form

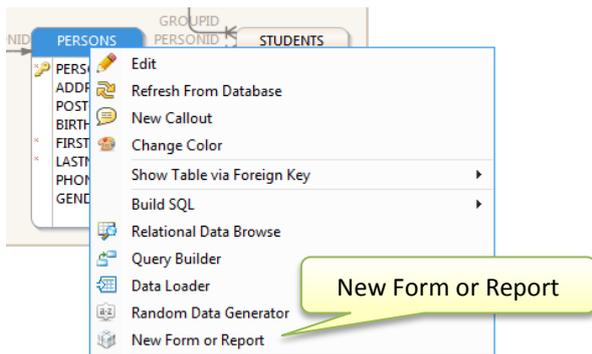
To build our first form we will use the DbSchema sample project. Start DbSchema and if no project is open the welcome screen should show up.



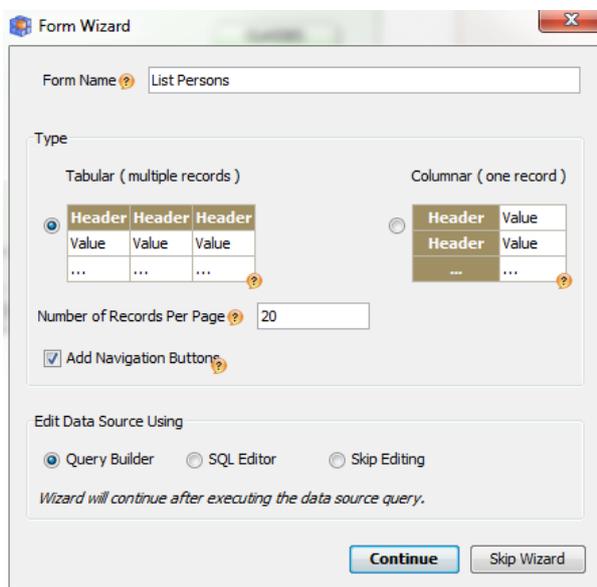
Open the forms sample project.



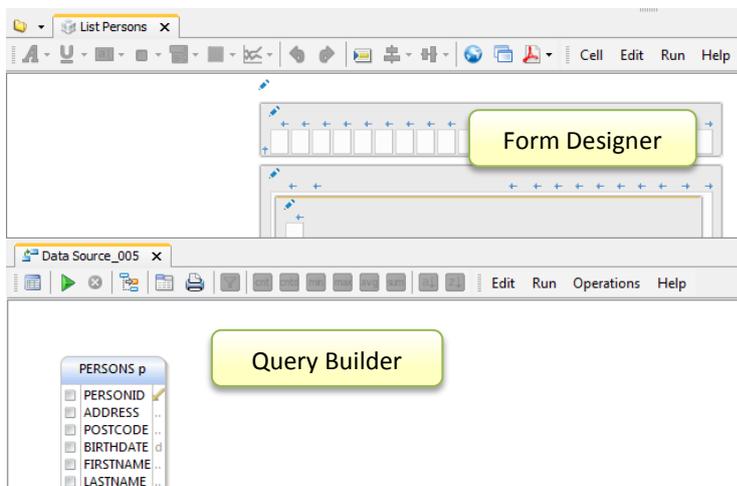
Right-click the 'persons' table and choose 'New Form or Report'. The Forms Wizard will start.



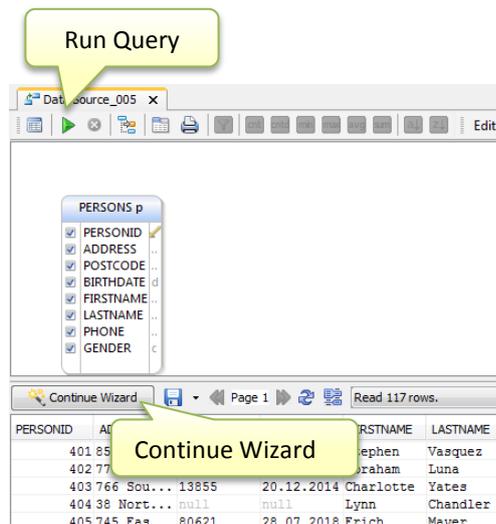
In the wizard dialog enter 'List Persons' as form name and keep the default settings. Press the 'Continue' button.



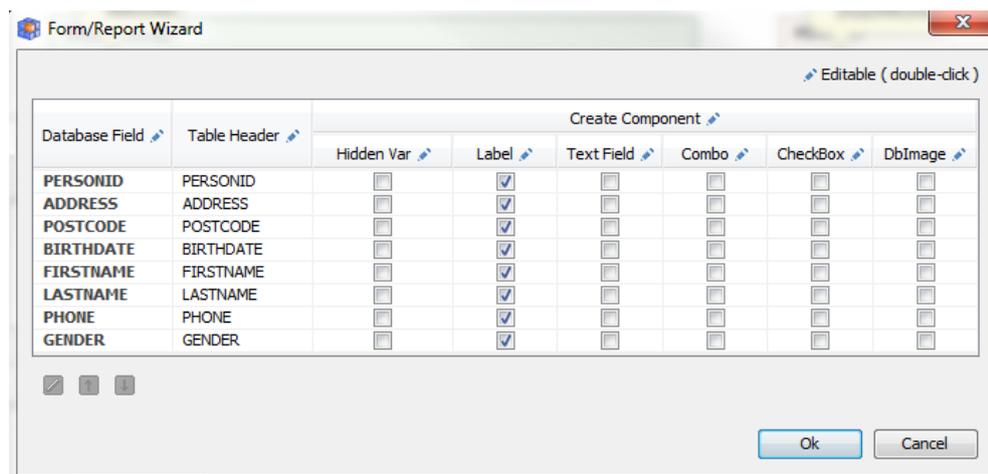
The form designer will open with a Visual Query Builder on the table 'Persons'.



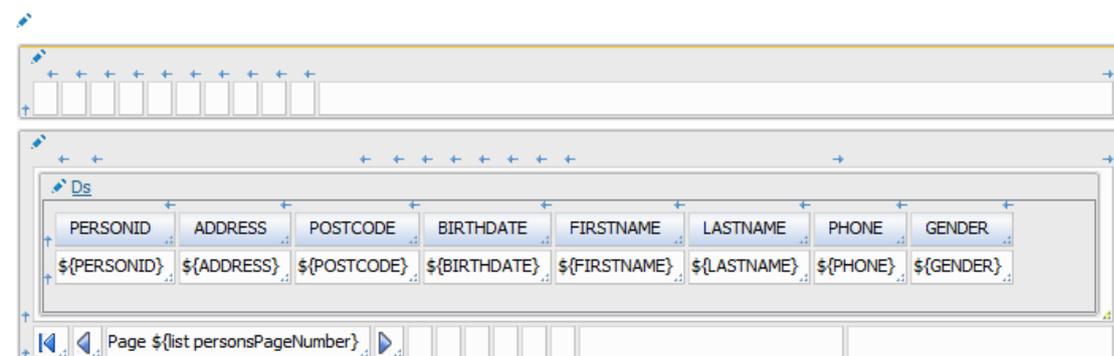
Select all checkboxes (right-click the table header and choose to select all) and run the query. In the result pane press 'Continue Wizard'.



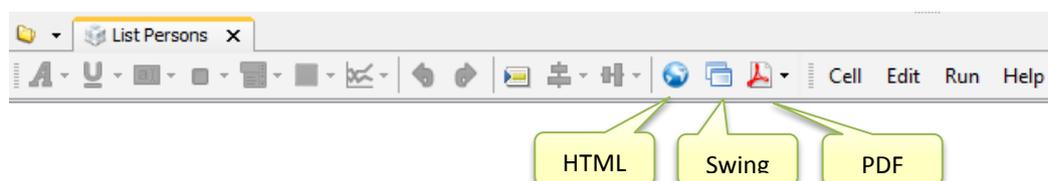
In the next dialog you can choose the components to attach for each database field. Use labels for all database fields and press 'OK'.



Our first form is ready. The form will look like bellow.



From the forms menu we can execute the form as HTML, Swing or PDF :



Executing as HTML you should get the following output.

| PERSONID | ADDRESS | POSTCODE | BIRTHDATE | FIRSTNAME | LASTNAME | PHONE | GENDER |
|----------|---------------------------------|----------|------------|-----------|----------|--------------|--------|
| 401 | 85 South White Oak Way | | 2017-04-24 | Stephen | Vasquez | 269-473-4733 | m |
| 402 | 778 South Rocky Hague Freeway | 98984 | | Abraham | Luna | 449-325-1064 | f |
| 403 | 766 South Green Old Freeway | 13855 | 2014-12-20 | Charlotte | Yates | 741-673-9398 | f |
| 404 | 38 North Green Milton Road | | | Lynn | Chandler | 662-941-5482 | |
| 405 | 745 East Green Hague Avenue | 80621 | 2018-07-28 | Erich | Mayer | 673-416-4081 | m |
| 406 | 63 West Green Clarendon Freeway | 52620 | 2019-11-16 | Dominick | Joseph | 530-791-8972 | f |
| 407 | 29 North White Second Road | 44112 | 2012-04-13 | Cherie | Fowler | 635-239-7748 | l |
| 408 | 47 East White Milton Way | 24280 | 2010-10-01 | Ebony | Townsend | 544-598-5933 | m |
| 409 | 35 South Green Second Freeway | 12959 | 2017-06-07 | Arthur | Ramsey | 658-911-4759 | m |
| 410 | 352 East Green Second Way | 34345 | 2019-06-30 | Debra | Reeves | 361-764-0767 | |
| 411 | 865 East White Hague Boulevard | 63321 | 2010-04-22 | Lara | Logan | 454-728-8665 | m |
| 412 | 380 West Green Milton Drive | 36922 | 2016-11-30 | Shelley | Curry | 879-751-0045 | l |
| 413 | 856 East Green Cowley Drive | 71553 | 2018-07-08 | Otis | Tate | 713-366-1208 | m |
| 414 | 618 South Rocky Clarendon Way | 27297 | 2010-07-27 | Rose | Reyes | 655-114-7147 | l |
| 415 | 97 South White First Street | 14363 | 2014-01-31 | Roxanne | Hale | 737-113-8133 | f |
| 416 | | 86759 | 2013-07-10 | Kendall | Shelton | 485-197-4126 | m |
| 417 | 27 South Rocky Nobel Road | 59566 | 2019-12-08 | Emily | Cobb | 772-745-4177 | m |
| 418 | 692 South Green Fabien Way | 16051 | 2015-08-15 | Damien | Stout | 474-347-9364 | f |
| 419 | 952 East Rocky New Way | 36313 | 2014-10-05 | Owen | Meyer | 144-261-8199 | |
| 420 | 48 West Rocky New Blvd. | 53874 | 2010-06-30 | Jim | Turner | 434-679-3496 | m |

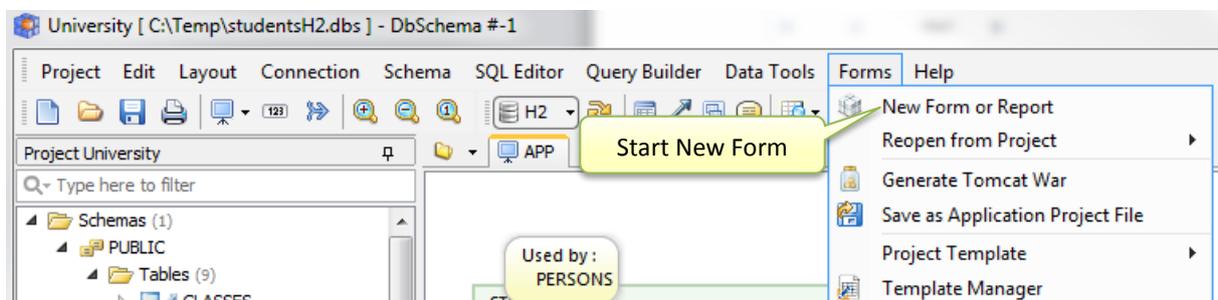
Read the next chapter to understand the form designer and how to use it.

Manual Design Second Form

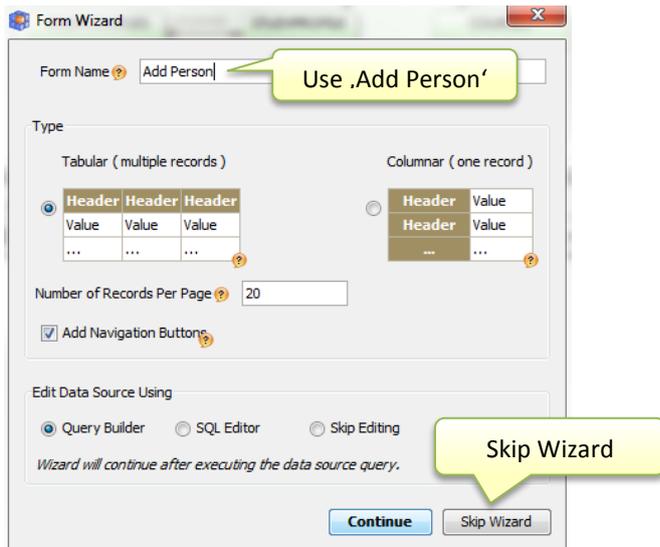
In this chapter we will build together a new form called 'Add Person'. This form will be used for adding new persons into the 'persons' database table. The form will look like bellow.



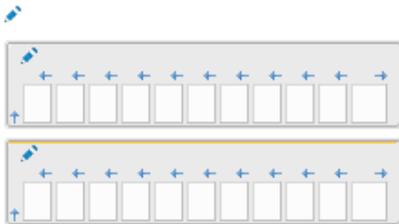
From DbSchema main menu choose 'New Form or Report'.



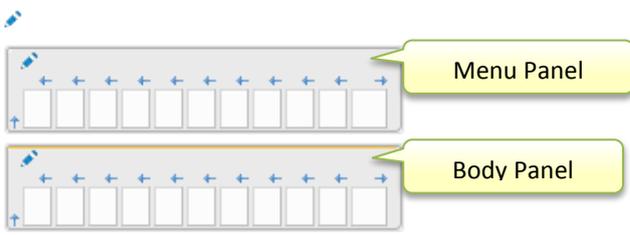
The wizard will show up. Enter form name 'Add Person' and press Skip Wizard button.



An empty form will show-up.

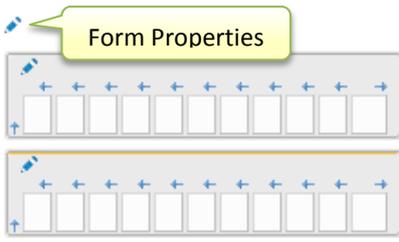


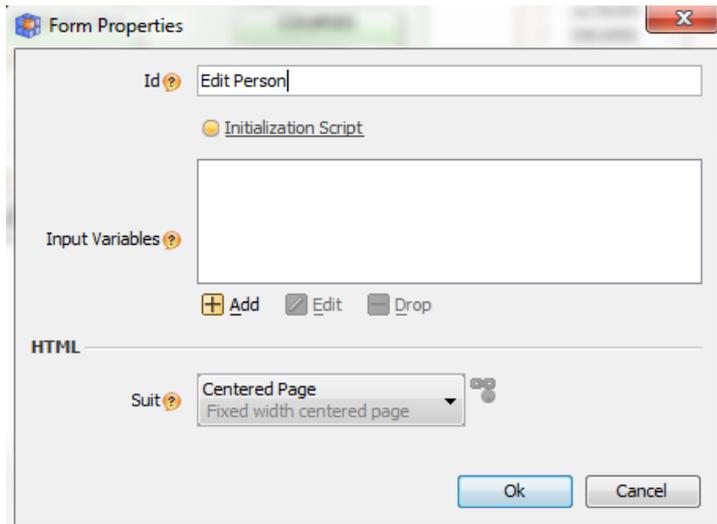
The form consists of two panels: one for menus and one for body.



Form Properties

The first pencil button is for the form properties. Click it to open the Form Properties Dialog.





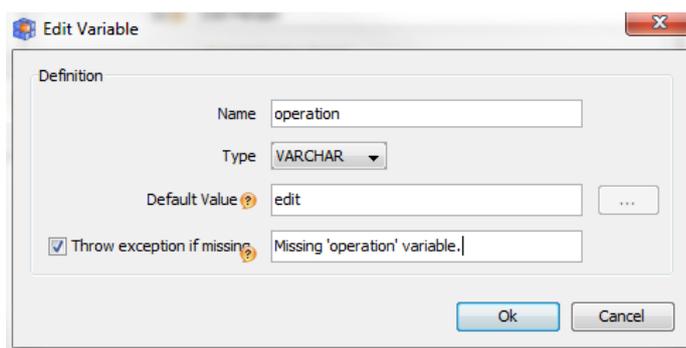
The **Initialization Script** can be a groovy script executed when this form is displayed. The script can contain logic for validating input data received, to implement authentication, etc.

Forms work on a similar basis with HTML applications. When a user modifies some data in a page, the effective database modification will be done in the next page. Forms work similar: data modifications are done in initialization script of the next form. Pressing a button may call the same form (where the button belongs to), but the form will be rendered again and its initialization script will be called.

The **Input Variables** are used to validate or define input data. This because each form (A) may send some variables to the next form (B), in a HTML format :

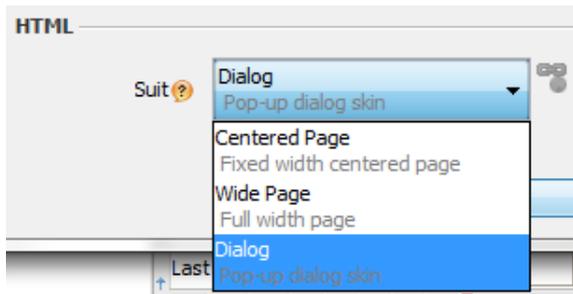
operation=add&firstname=John&lastname=Turner

In form (B) we define a variable 'operation' with the default value 'edit'. If the variable is missing, the form will throw an exception with the given text.



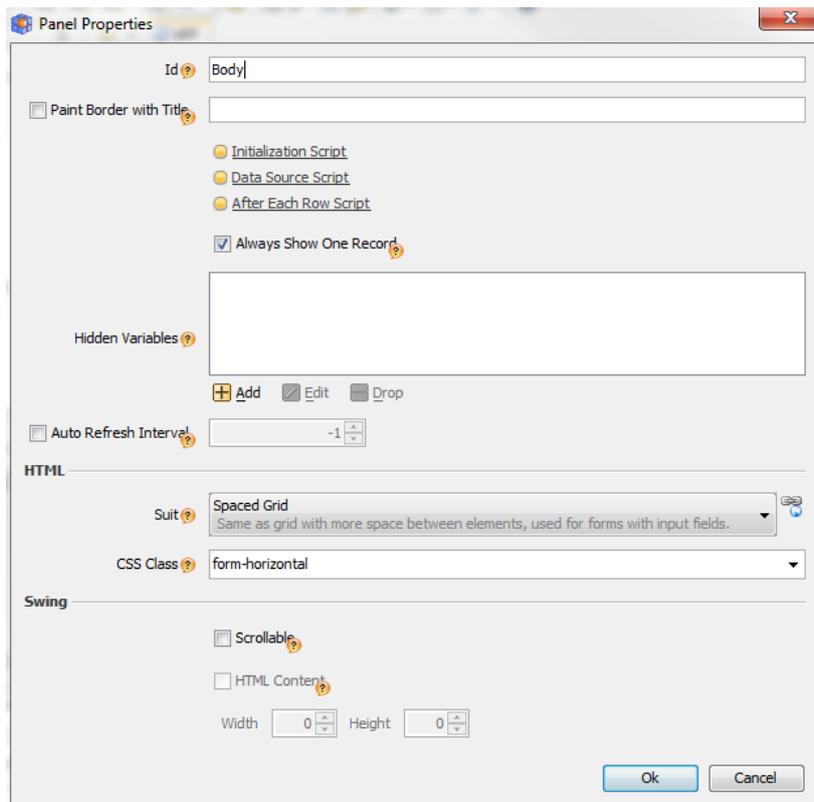
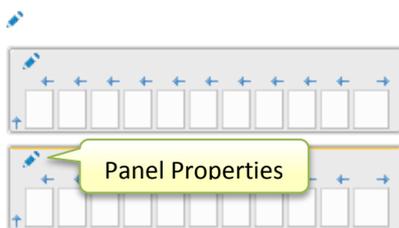
The **Suit** is the HTML representation of the form page or of a component. 'Centered Page' is used for a web page with left and right margins, 'Wide Page' for no margins and 'Dialog' if the form will show inside a dialog.

In our case we choose the suit 'Dialog', since we plan to show this form inside a dialog on top of the form 'List Persons'.



Panel Properties

Similar with form properties, we can edit the panel properties. Click it to open the Form Properties Dialog.



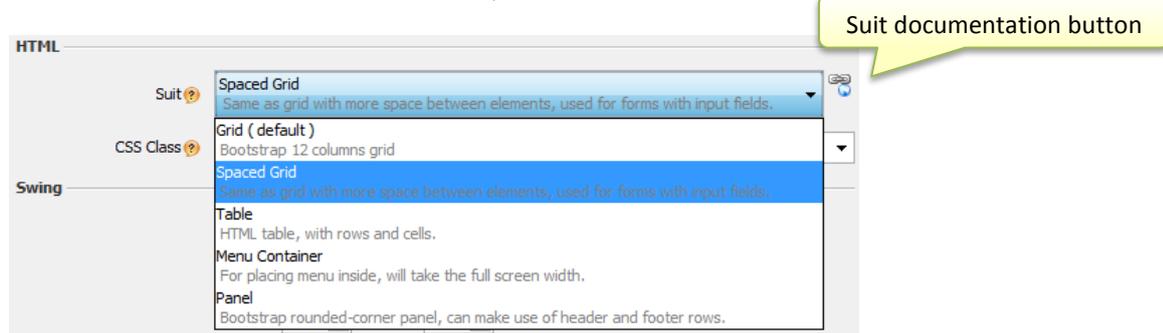
Each panel may use three **scripts**: *initialization*, *data source* and *after each row*. The initialization script is executed before the panel is rendered. The data source script provides data from the database to be shown inside the panel. The *after each row* script is used to compute statistics over the data coming from the data source.

The **always show one record** flag can make a distinction for the columnar forms. If the data source returns zero records, the panel will behave as it would have got an empty record and display the components inside one time. The same if the data source has three records, the panel will display only the first record.

The **hidden variables** are used to remember data without displaying it on screen. As example let's use an *edit person* form. The form receives a variable '*personid*' from the previous form and has to remember it without showing it on the screen. In this case we create a hidden variable '*personid*' which will be sent together with the other data to the next form. Components which are storing itself the variable values are input fields, combo boxes, radio buttons and checkboxes.

Panel Suit

Panel suits are similar with the form suit, used to decide how the component is represented in HTML.



The Grid is using a 12-column Bootstrap grid documented on <http://getbootstrap.com/>. You can press the small button near suit combo to get directly to the documentation. The predefined panel suits are:

- Grid – is a 12 equal-size bootstrap columns grid. In the designer the columns are not equal sized because we use a different representation for swing. Read the cell sizing chapter for details.
- Spaced Grid – same as grid, but with more space between cells. Use this for forms showing text fields, radio buttons, etc., where more space is required between components
- Table – the content will be represented as an HTML table
- Panel – is a bootstrap panel with rounded corner

Swing Settings

The Swing settings are used when the form is executed as Swing application.

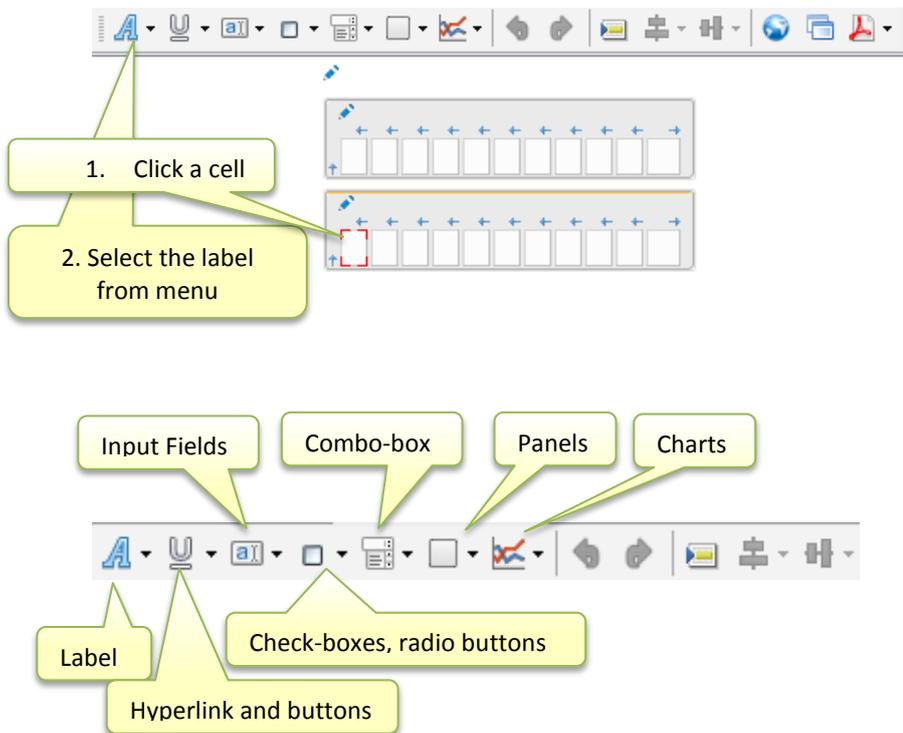
The Swing settings include the scrollable property, which will wrap the component inside a scroll pane. This will allow using scroll bars for the actual panel. If you select this option the panel can have a custom size. Only some components can be resized. You can resize them also using the mouse, by drag & drop of the grid corner while CTRL key is pressed.



The HTML content determines the rendering of the panel as HTML, displayed inside a JEditorPane.

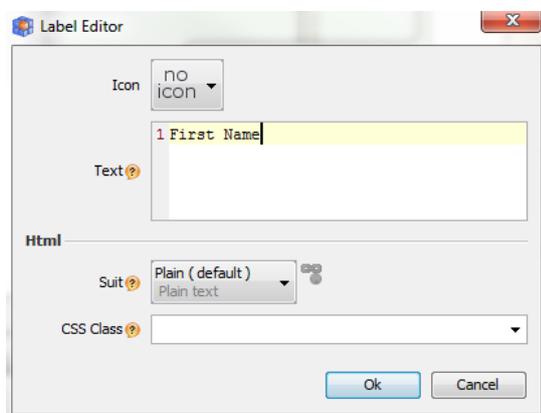
Add Components to Panel

In this chapter we started a new empty form. Let's add some components to it. First click an empty cell and choose a label from the menu. Right-clicking the cell you can choose the component from pop-up.

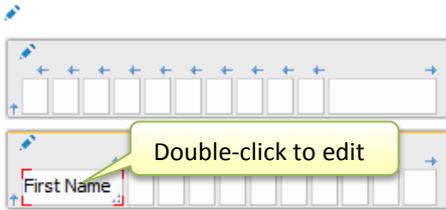


Remember that panels can be created inside panel as each any other component. An unlimited chain of panels inside each other can be created.

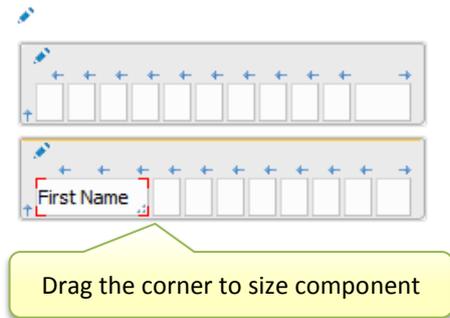
When you choose the label component the label dialog will show up. Enter 'First Name' as label text.



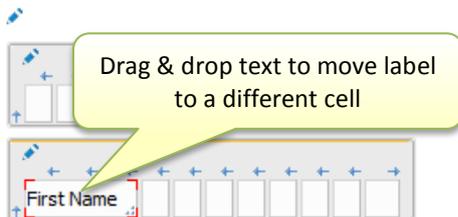
After the label is created, re-open the label editor by double-clicking the label.



One component can cover more than one cell. Drag and drop cell from the right-side bottom grip to size it.



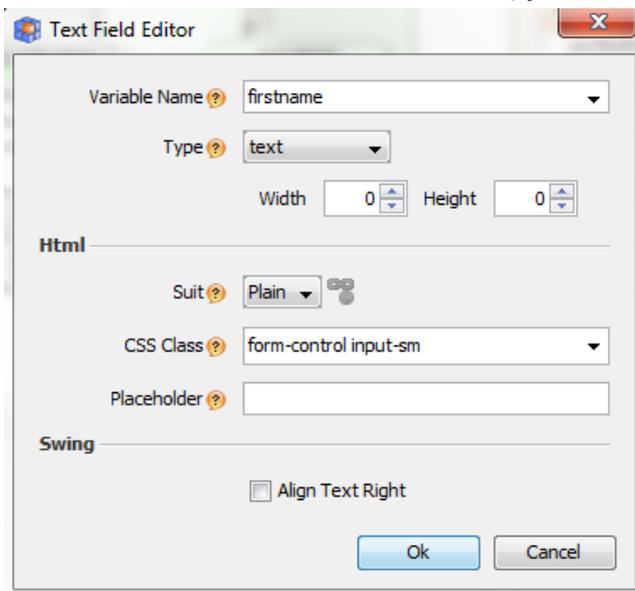
Similar you can move the label to a different cell. Drag and drop the text inside.



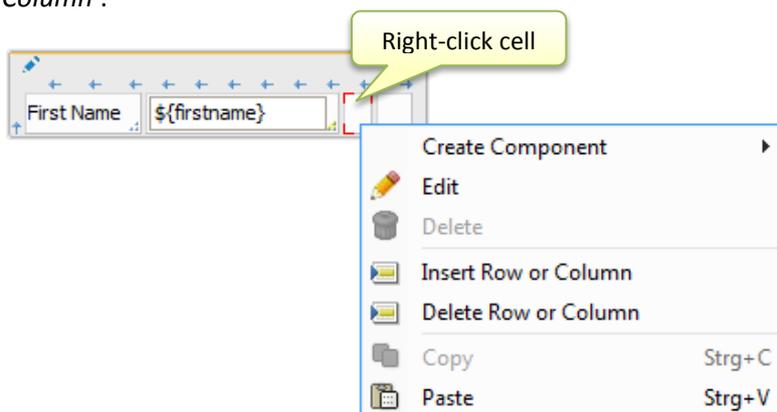
Using the same procedure create a text field beside the label, with *'firstname'* as variable name.



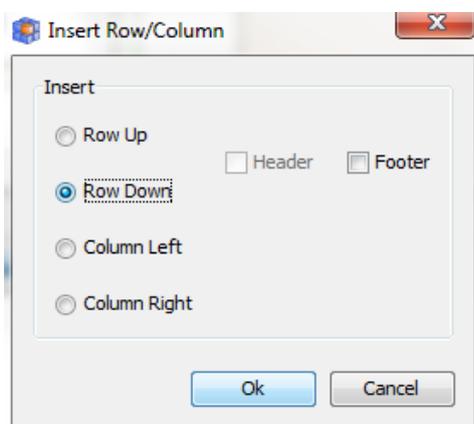
The text field will show the text defined by the variable with this name and will also send to the next form the text in a variable with this name (*'firstname'*).



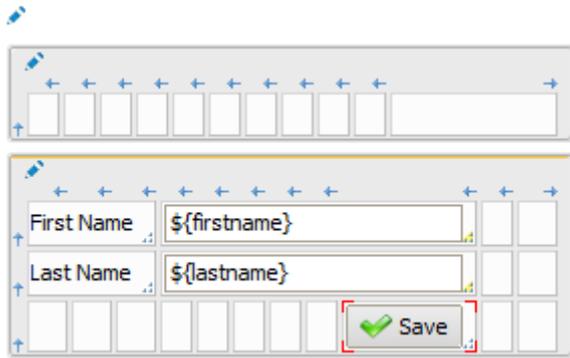
Next step add one more row to the panel. Right-click and empty cell and choose *'Insert Row or Column'*.



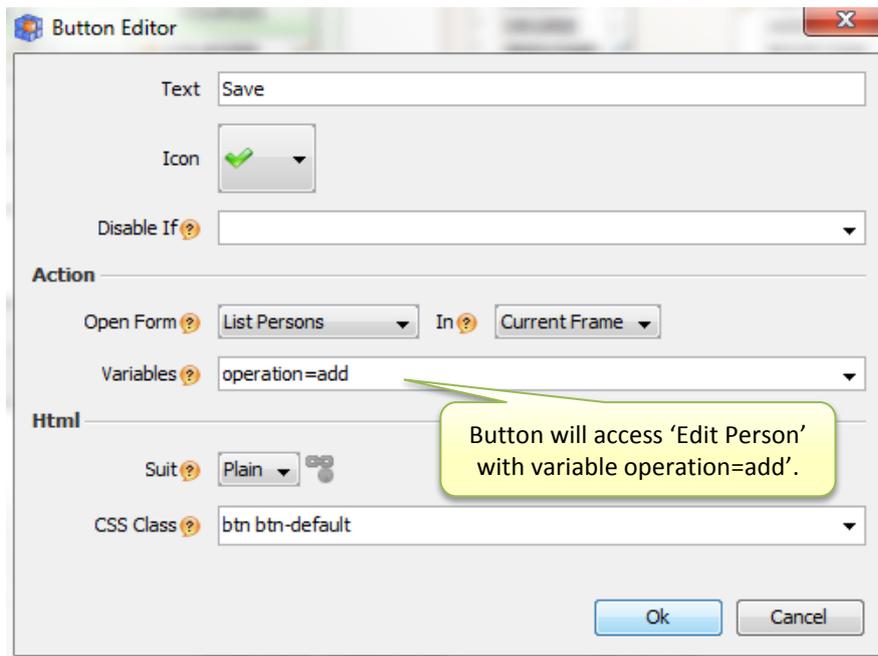
Use *'Row Down'* to insert the row under the current selected cell.



Similar add label and text field for *'lastname'* and then add a button.



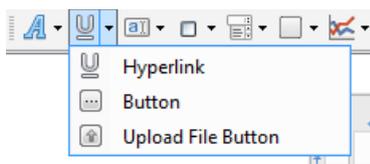
For button choose the text 'Save'. Button should open the 'Edit Person' form in current frame.

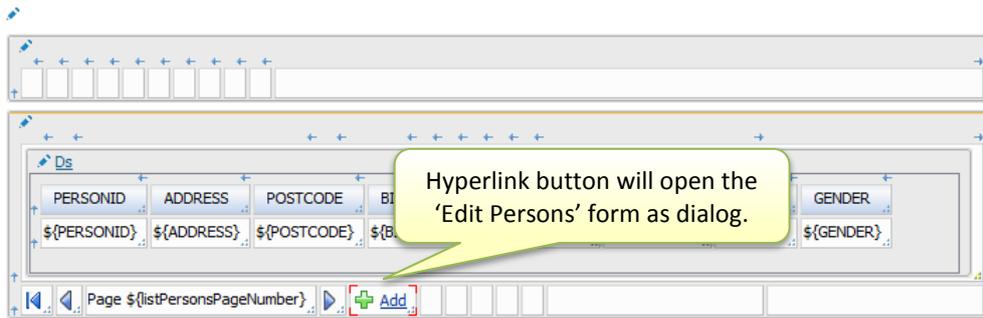


The variable operation with value 'add' will be sent to the 'List Persons' form when pressing this button. In 'List Persons' we will create an initialization script. The script will check for this variable, and if it has the value 'add' will insert a new person in the database.

We see here a field '**disable if**'. The text inside will be evaluated as groovy variable, and if the value is *true* the text field will be disabled. Sample: `${page < 0}`. It can contain plain text as well, like true or false.

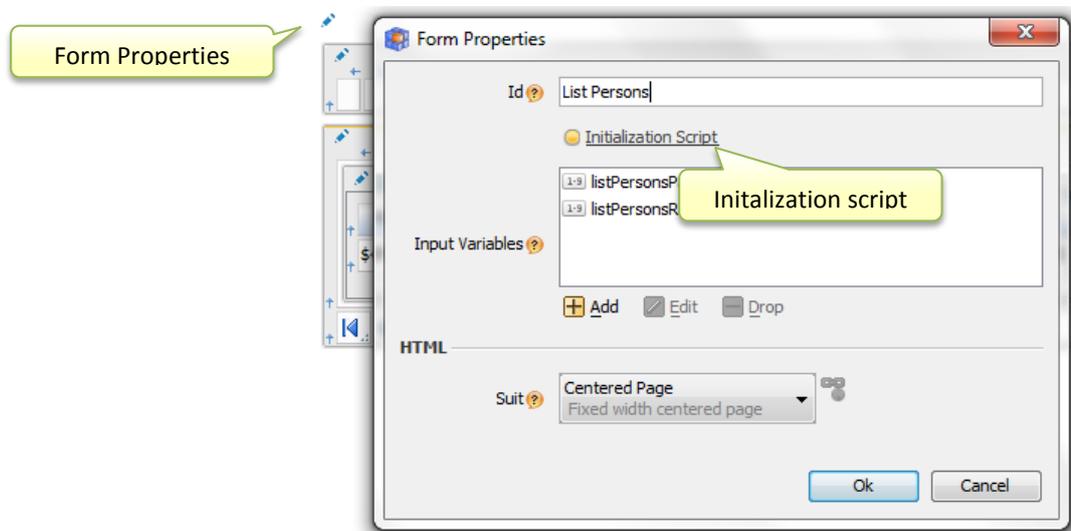
This form will be accessed from '*List Persons*', therefore let's create a hyperlink button in '*List Persons*'.





The Initialization Script

Now is the moment to add the logic in the 'List Persons' which will add the new created person into the database. Click the form properties dialog and then the Initialization script.



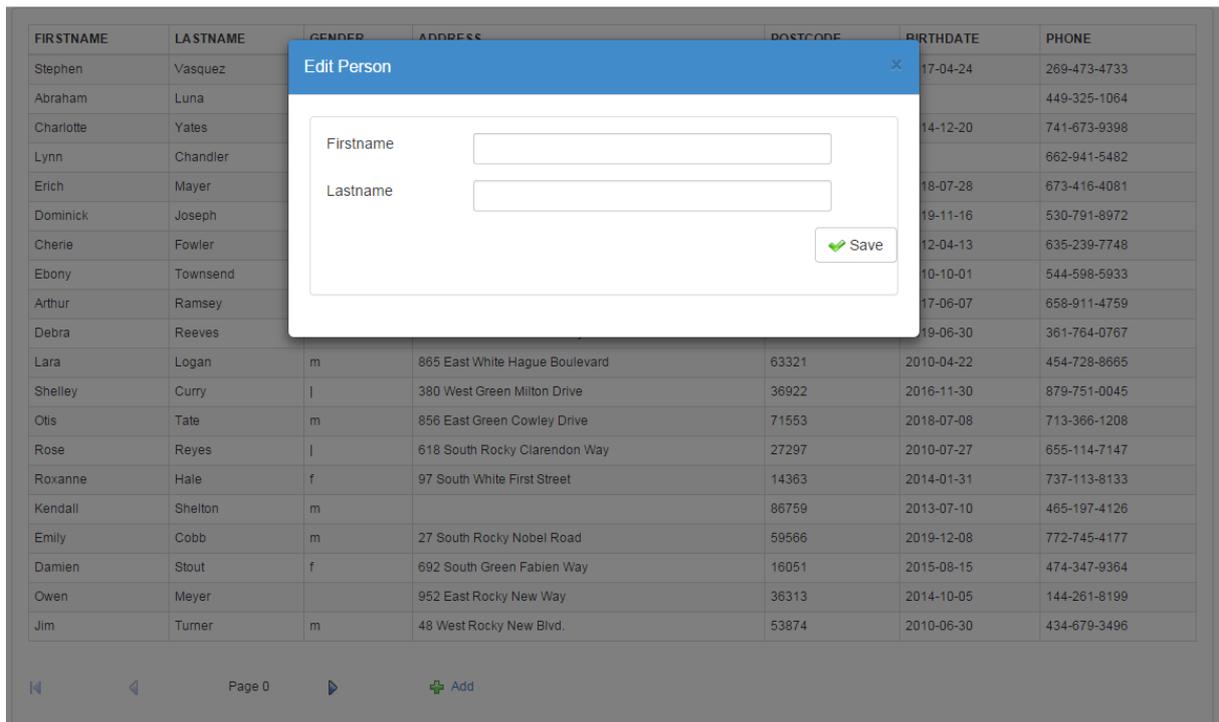
The script editor will open. Enter the following text in the editor.

```
if ( 'add'.equals( operation )){
  sql.execute( "insert into person( firstname, lastname ) values
  ${firstname}, ${lastname} ) " )
  sql.commit()
}
```

The script is checking if the variable *'operation'*, and if its value is *'add'* will insert a new person into the database *person* table.

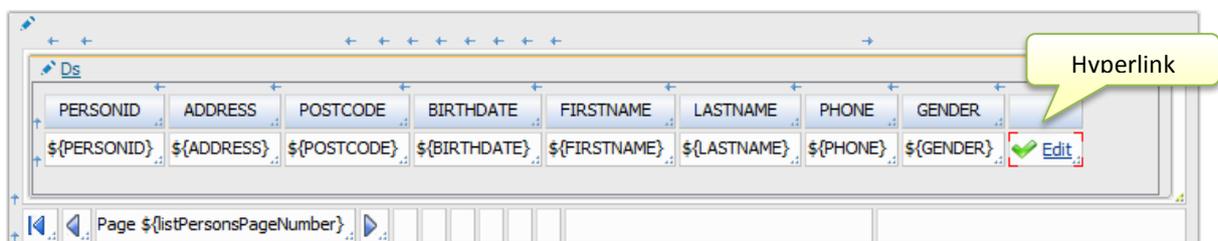
The script uses the Groovy language. Check in Google for Groovy tutorials.

Now execute the *'List Persons'* form. Clicking the *'Add'* button you should get something like bellow.

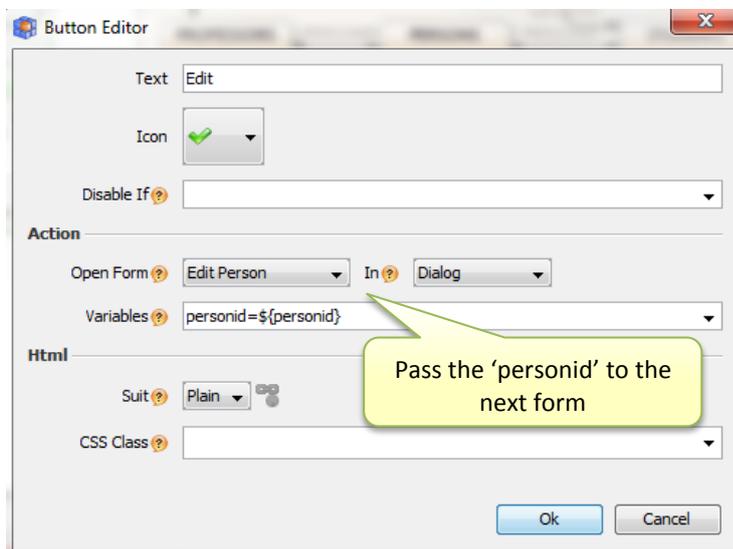


Add Hyperlinks for each record

Now our application works. We can list the persons and we can add a new person to the database. But what if we want to edit a person? We may create a hyperlink for each record, like this:



The hyperlink should access another form 'Edit Person' by sending the variable personid like here:



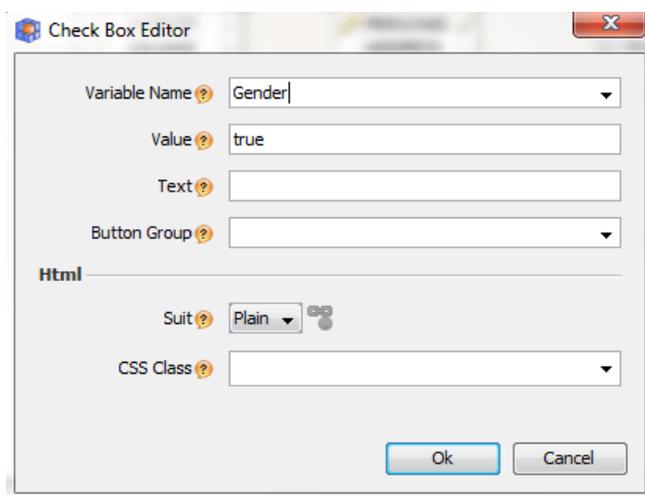
The forms can be designed so the same form can be used for adding new persons or for editing an existing person. That form may have a data source script based on personid, and if the person is new the personid can be -1.

Checkboxes and radio buttons

Checkboxes and radio buttons require a variable name. If the checkbox is selected, this variable will be true in the next form. As for text fields, checkboxes value is automatically being sent to the next form.

The value field can be a groovy expression or some text. This sets the initial value of the checkbox. The text field is similar.

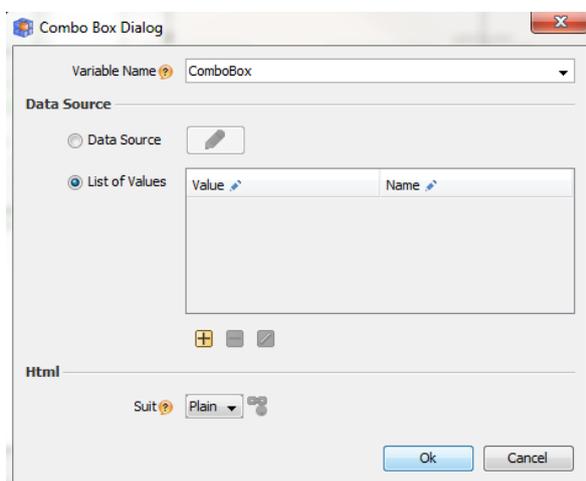
The button group can be any name. In a group of radio buttons only one radio will be selected.



The screenshot shows the 'Check Box Editor' dialog box. It has a title bar with a close button. The main area contains several fields: 'Variable Name' with a dropdown menu showing 'Gender', 'Value' with a text field containing 'true', 'Text' with an empty text field, and 'Button Group' with a dropdown menu. Below these is a section titled 'Html' containing 'Suit' with a dropdown menu showing 'Plain' and 'CSS Class' with a dropdown menu. At the bottom are 'Ok' and 'Cancel' buttons.

Combo Boxes

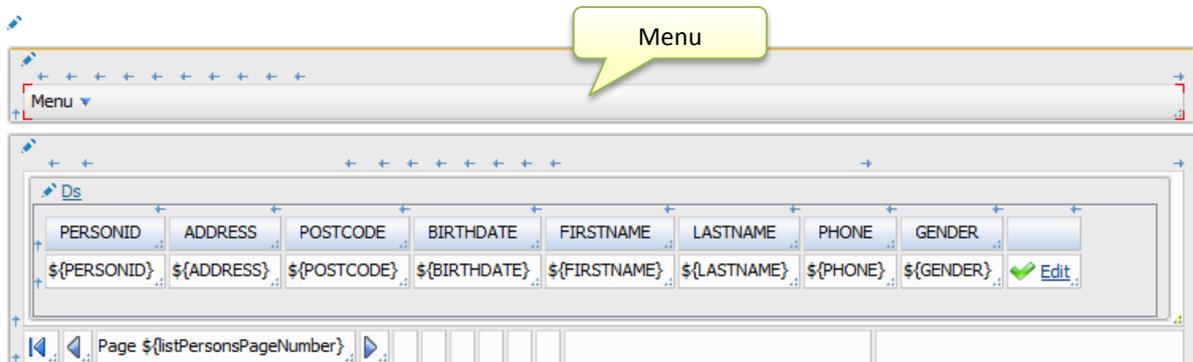
Combo boxes shows the items based on a list of values or a data source script. The SQL data source script should return two columns (value and name). If a single column is returned, both value and name will have the same value.



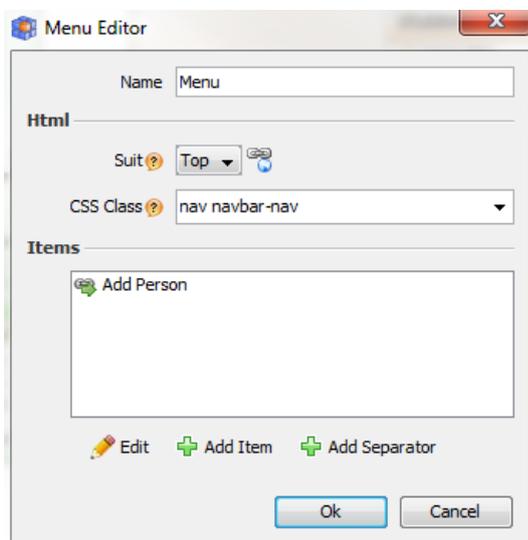
The screenshot shows the 'Combo Box Dialog' dialog box. It has a title bar with a close button. The main area contains a 'Variable Name' dropdown menu showing 'ComboBox'. Below is a 'Data Source' section with two radio buttons: 'Data Source' (unselected) and 'List of Values' (selected). The 'List of Values' section has a table with two columns: 'Value' and 'Name'. Below the table are three small icons: a plus sign, a minus sign, and a checkmark. At the bottom is an 'Html' section with a 'Suit' dropdown menu showing 'Plain'. At the very bottom are 'Ok' and 'Cancel' buttons.

Menus

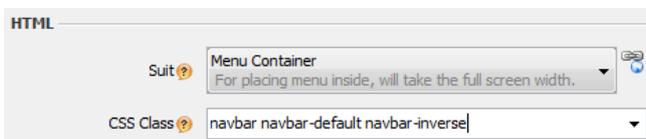
Add menus in the top menu panel. Menu shortcuts are referring another menu, so you don't have to define a menu each time you define a new form and rather refer an existing one.



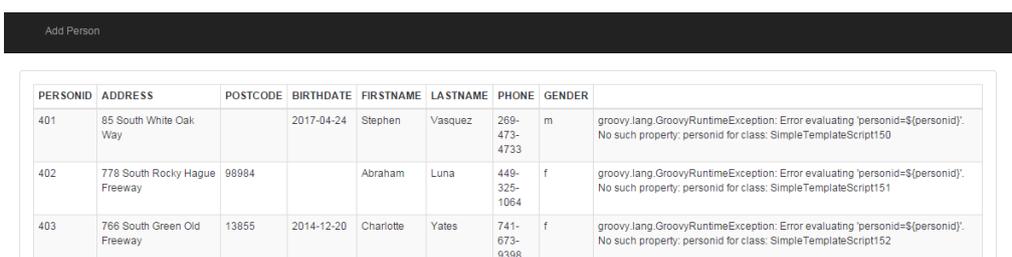
In the menu dialog add items as links to other forms, similar with hyperlinks.



In HTML the menu will show correct if you change the menu panel suit to 'Menu Container' and CSS like here.

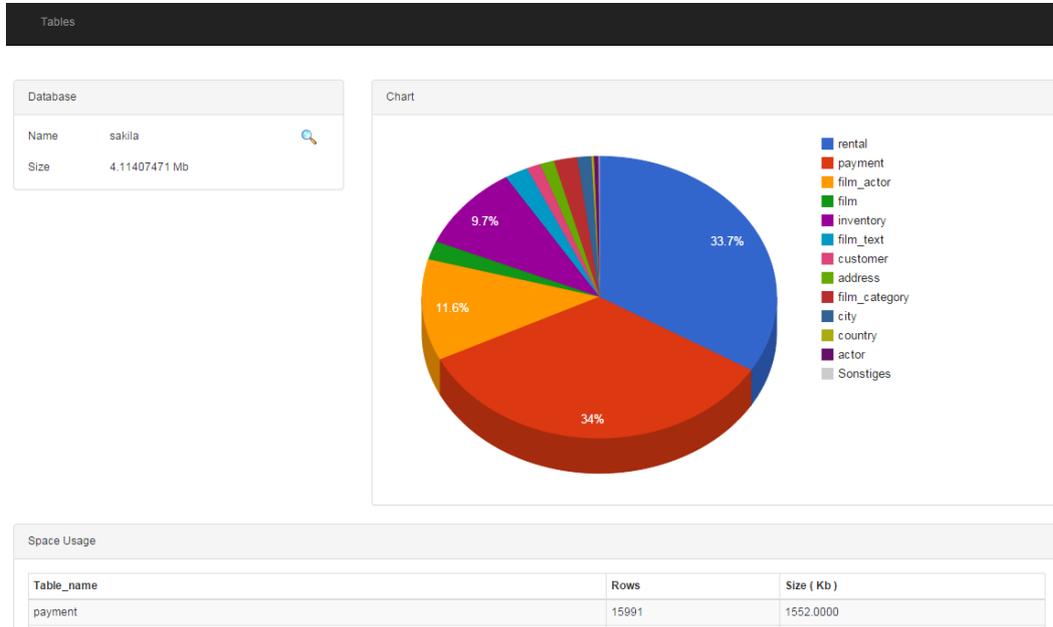


The HTML page will look like:



Charts

The component suite includes charts as well. Line, bar and pie charts can be used. Other charts can be implementing them in the forms template.



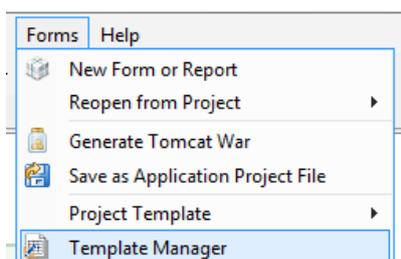
The chart component require a data source script, which should return:

- First column a string (the name of the value)
- Second column the value (number: integer, long, double, etc.)
- Further value columns if the chart is for example a multi-line chart

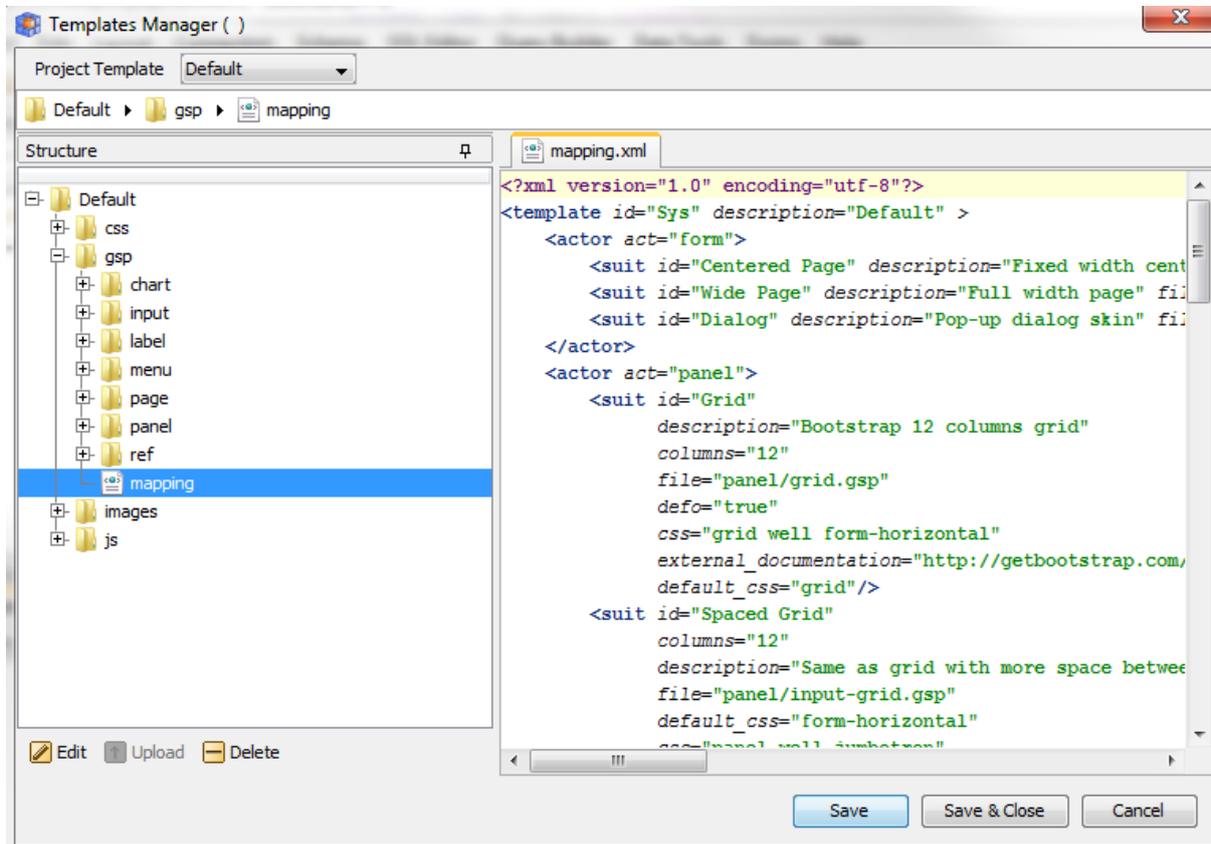
Form Templates

The forms are rendered in HTML using customizable Groovy templates scripts. This means you can modify the look of a component or you can add new representation for a component. We call **'Suit'** a component representation in the template.

The template manager is accessible from the DbSchema main menu.



The template manager is in fact a file explorer. The template files are located on disk in the `C:/Users/<current_user>/DbSchema/templates` folder. The template include java script files (`js`), `css` files and images which will be available in web as they are. The `gsp` folder contains a file named `mapping.xml` which makes the binding of each component to a `gsp` file.



As example the label component has few suits: `plain.gsp`, `h1.gsp`, `h2.gsp`..., etc. The `h1.gsp` looks like:

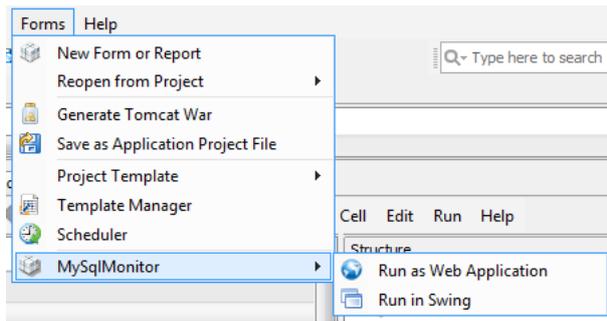
```
<% if (actor.getIconName()!=null){ %><img src='${actor.getIconName()}'>&nbsp;&nbsp;&nbsp;<% }
%><h1>${text}</h1>
```

This will output the `<h1>...text...</h1>` and place an image tag before if the label has an image. The component is passed under the name 'actor' to the script and has the properties as described in the DbSchema API (read the DbSchema Help).

DbSchema Management Applications

Based on DbSchema forms and reports engine we start implementing management applications for each database. The target features will be space usage, database activity and locks, management of user roles and rights, etc.

This application will be available as **open source project**, so users are free to contribute to their development. Please contact us on support@dbschema.com if you want to contribute to this.



End

We hope you will enjoy the DbSchema forms. Please notice that this is a recent feature in DbSchema, released under the beta version. Please write us back if you find any issues or you wish to get new features.

