JAM User's Manual

Introduction

JAM is a tool that allows for creating self-configuring peer-to-peer (P2P) networks. Workspaces in JAM are automatically synchronized among all authorized users and can be used online or offline. Workspaces can be accessed from various clients: a rich client running on desktop computers, a mobile client (on the iPhone or iPod touch[1]) or a web application.

The database structure differs from company to company, therefore JAM comes with a Designer tool that lets sophisticated business users design and configure their own data forms. The data forms are defined once and can be used on all devices JAM is available for. Furthermore, the Designer tool allows for defining fine-grained access rights to the database.

Minimal requirements

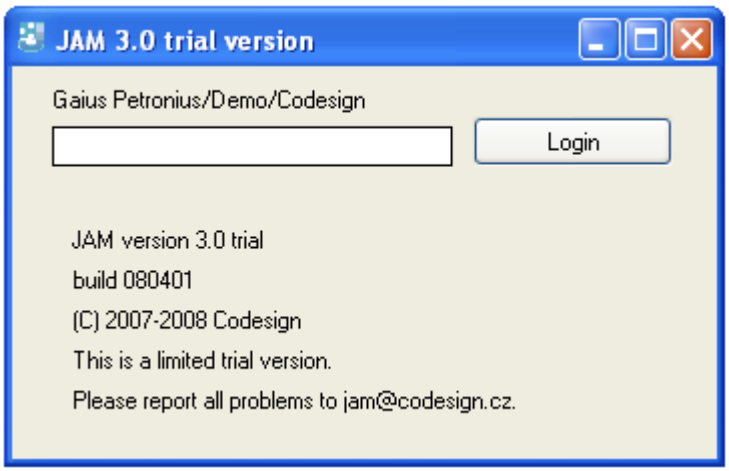
- desktop version: operating system Windows XP SP2 or Windows Vista, .NET Framework 3.5+
- mobile version: iPhone/iPod touch with firmware 1.2 (2.0).

Using JAM

Starting JAM

To start JAM, double click on the icon of the program. Alternatively, you can launch **jam.exe** from the command prompt.

In the window with an edit box for the password, enter your password and press Enter or click on the button **Login**. Once logged in, you can access your shared data. If you have entered an incorrect password, the window will not disappear and you will need to enter the password again.



[1] The mobile version will be available via App Store that has been announced by Apple to be launched in June 2008.

Quitting JAM

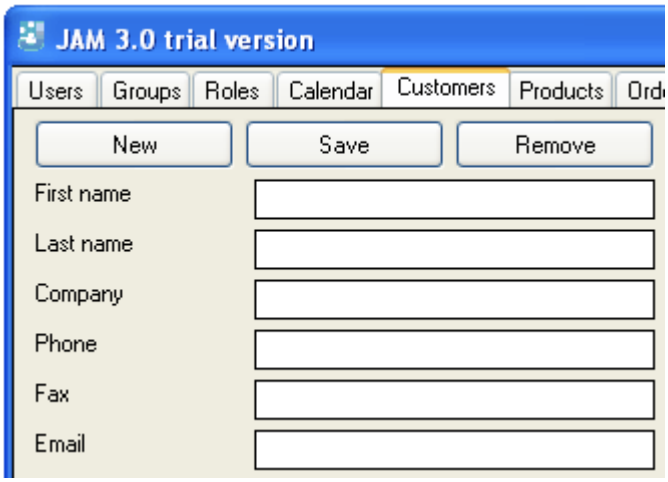
To quit JAM, close the main window. Any unsaved information in the tabs will be lost.

Opening a record

In a tab, you see a list of records on the right side. To see all fields of a record, click on the record in the list. All fields of the record will appear in the form on the left side of the window. Depending on your access rights, some fields of the record may not be editable.

Creating a record

To create a new record, click on the button **New** above the form on the left side of a tab. If the button **New** is disabled, you have not sufficient access rights to create new records in the tab.



The new record will be sent to other members of the workspace.

Modifying a record

To change a record, select it in the record list and modify the field values. To save the changed record, click on the button **Save** above the form. If the button is disabled, you have not sufficient access rights the modify the record.

The modified record will be sent to other members of the workspace.

Deleting a record

To delete a record, select it in the record list and click on the button **Remove** above the form. If the button is disabled, you have not sufficient access rights to delete the record.

The notification about the deletion of the record will be sent to other members of the workspace.

Sorting records

To sort records in the record list, click on a column header. The records will be sorted by the field associated with the column in the ascending order. To sort the record in the descending order, click on a column header twice. When a tab is

selected for the first time, the records are sorted by the first column in the record list.

Synchronizing data in the workspace

JAM uses a self-synchronizing database, i.e., any changes (new, modified or removed records) will be distributed to other users of the workspace automatically. If the user is offline, all database modifications are distributed to other users as soon as JAM can access a working internet connection again. On the other hand, all changes made by other users while JAM was not running or the user was offline will appear in the database.

Due to the possibility of changing the database offline, synchronization conflicts can arise when two or more users change the same record simultaneously. If the users have changed different fields of the record, the changes are merged so that the most current values are available for all users. If the same field has been changed by several users simultaneously, the most recent change is used as the current value of the field.

Managing users, groups and roles

Adding a new user

To add a new user to the workspace, you must have sufficient access rights for managing users, groups and roles (only administrators have those, by default). Select the tab **Users** and click on the button **New** above the form. Fill in all fields of the form and click on the button **Save**. Select the new record in the record list and click on the button **Generate user key** above the record list. Type in the password for the new user, confirm it and click on the button **Generate**. A file with the user key will be generated immediately. The name of the file consists of the full name of the user and some other fields you have typed in. The extension of the file is „juk". The file gets created in the current working directory (the directory with the executable binary file **jam.exe**).

The new user needs the file with the user key in order to be able to log in and to work with the workspace data. Immediately after the installation of JAM for the new user, his database is empty. Any user with sufficient access rights to manage users can initialize the new database by selecting the user's record in the tab **Users** and clicking on the button **Push spaces** above the record list. The contents of all tools will be sent out to the new user (the user will get the data immediately if he/she is online). After having received the contents, the new user might be required to restart JAM in order the changes to take effect. Simply quit JAM and launch the program again.

Managing user groups

Users can by organized in groups to facilitate the management of access rights. A user can belong to one or more groups. Groups in turn can be assigned roles that allow for fine-grained access rights. The concept of user groups and roles is very flexible. It allows for an advanced control of access rights which is extremely important in hierarchical teams.

To add a new group, select the tab **Groups** and click on the button **New** above the form. In the tab **Users**, you can add users to groups. Select a user record and toggle groups by clicking on the name of the group while holding **Ctrl**. Then click on the button **Save**.

Managing roles

Roles are used to specify access rights for groups. There are the following basic operations the access to which may be restricted:

- reading records,
- creating records,
- changing own records,
- deleting own records,
- changing any record,
- deleting any record.

You can create custom roles and assign groups to them. Select a group in the tab **Groups** and toggle roles in the form on the left side of the window by clicking on them while holding **Ctrl**. All users who belong to a group will hold the roles assigned to it. See below for how to use roles in the Designer tool to restrict access to form operations.

There are several pre-defined roles that are used to control access to pre-defined tools, such as CRM. For example, the roles **CRM reader, CRM updater** and **CRM remover** specify the roles that are allowed to read, modify and remove records in the CRM tool, respectively.

The administrator has the role **almighty**. Form designers have the role **designer**.

Pre-defined tools

There are several pre-defined tools in the initial installation of JAM:

- calendar,
- CRM with the following views:
  - customers,
  - products,
  - orders,
  - invoices,
- task management with the following tools
  - task pools,
  - tasks,
- attendance of employees,

• simple project management.

Most tools let you print the content of a record. Select a record in the record list and click on the button **Open as PDF** above the list. A pre-filled form with field values from the selected record will be generated and displayed. You need a PDF viewer on your computer in order to be able to view and print PDF files. The layout of the generated PDF document is pre-defined and can be modified as described in the next section.

Specifying the layout of tools

The pre-defined and, optionally, user defined tools have a default layout of elements (labels and data fields) for reporting and printing.

The layout can be modified using the Report Designer which is an add-on module of JAM. To use the Report Designer, the .NET Framework version 2.0+ must be installed on the computer.[2]

To open the Report Designer, select the tab of the tool you want to modify. Then click on the button **Report designer** above the record list. A new window will be opened with the layout of form elements for the selected tool. If you have never modified the layout of the tool before, there will be the default two-column layout with field labels in the left column and data fields in the right column.

In the Report Designer window, you can move the elements and change their size by placing the mouse cursor on the bottom right corner of an element. You can also specify whether an element should be visible in the report by toggling the checkbox **Visible** in the top right corner of the window.

To quit the Report Designer, close the window. You will be asked if you want to save the changes. To save the changes, click **OK**, otherwise click **Cancel**. If you decide not to save the changes, they will be lost.

[2] The .NET Framework is an extension of the Windows operating system and can be downloaded for free from the Web site of Microsoft.

Developing with JAM

You can develop form-based solutions using JAM to design databases. These solutions allow users to add, update and delete records in a database. The user sees the customized form as a window within the client on a device (desktop computer, mobile device or Web aplication). The user can access multiple records in a table or individual records in a form.

The Designer tool is the easiest to use of the JAM development environments and the only one which is generally available to all users. A sophisticated business user can design a form without any programming knowledge by simply defining fields in the form. Although the Designer tool is easy to use, it is possible to design large and complex form-based solutions using it.

In summary, a JAM application developed with the Designer tool:

- uses record-based data,
- allows for accessing records through clients on various devices,
- optionally, can include custom code.[3]

Who uses the JAM Designer tool?

Typically, there are two types of the Designer tool users:

Form designers. Form designers use the tabs **Forms** and **Form fields** to define form structure and access rights to records. The designed forms are distributed automatically to other workspace users.

Form users. Form users are any JAM users who access forms developed with the Designer tool. The custom forms developed with the Designer tool can be used like any other JAM form in separate tabs.

For example, employees in a workgroup might use a set of forms „Project management", that is, a workspace that contains forms designed for managing project information.

How custom form design evolves

Every custom form begins with an idea for a custom application. The first two phases of the development process include the analysis of requirments for the custom application and the conceptual and technical design of the structure of forms. A form designer then creates the custom application in the JAM Designer tool based on a set of requirements. He or she does proceed as follows:

- Creates a workspace that includes the Designer tool.
- Creates and tests the required forms and access rights.

For example, a Software Development department might want to collect information on projects and project members workspace. Employees in the department might design the forms of the application themselves, or instead they might enlist a designer to build the application for them to their specifications. In

[3] This option applies only for experienced C developers.

this case, the designer can create the required forms and views in the Designer tool and then make the forms available to all users of the workspace. The Software Development employee can then use the forms and share structured data with other members of the department.

About designing an application with the JAM Designer tool

Custom form applications are created in the „Designer" which includes the definition of forms and their fields. Only workspace members who have the role **designer** can access and make changes in the Designer tool.

The JAM Designer tool is a flexible environment that allows multiple workspace members to contribute to the design of an application. For example, one member might add all the fields to be used in forms, and another might define access right for the forms.

Form applications have two main design objects: forms and views. Forms are used for collecting data from members of a workspace. Views are used for presenting the collected data to members of the workspace. Additionally, you can add custom actions to an application.

Form design objects

A form consists of a variety of fields, depending on the information to be collected. For example, there may be fields for entering text, selecting an item from a list, picking a date etc.

Each type of field has a corresponding set of editable properties that allow you to provide guidance or set rules for people who use the forms. For example, you can place an initial value in a text field or make a field „required" (meaning that the field must contain a value before the form record can be saved).

View objects

Views show the data collected in records and give workspace members ways to sort and interpret the data. For example, suppose you have created a form for collecting administrative data about employees. The form in that case might have fields for employees to enter their first name, last name, department name, manager's name, office and phone numbers, equipment serial numbers etc. In this case you might have several views. One might sort the data by last name, another by department name, another by manager's name, and so on.

Creating a form

To create a form, select the **Forms** tab. Then click on the button **New** above the form.

You have to choose a unique name of the form (field **Name**) and a label (field **Label**) which will be presented to the form users. If the form is a primary form, the field **Data source** will remain empty. Otherwise, it will contain the name of the form which will serve as the data source for this secondary form.

If the field **Status** has the value „development", the form will only be visible for users with the role **designer**. If the field value is „released", the form will be

accessible as a separate tab to all authorized users of the workspace the form has been designed in.

In the fields **Readers**, **Updaters** and **Removers**, you can specify roles that will be allowed to read, update and remove records of the designed form, respectively.

Creating a form field

To create a form field, select the **Form fields** tab. Then click on the button **New** above the form.

You have to choose a unique name of the field (field **Name**) and a label (field **Label**) which will be presented to the form users. Then select the form the field will appear in and the type of the field. The following field types can be used:

- a text edit box (**string**),
- a multiline text edit box (**multiline**),
- a date/time picker (**datepicker**),
- a select box with pre-defined values (**enumeration**),
- a select box with values from another view (**reference**),
- a multiple selection list with values from another view (**multireference**).

For enumeration, the field **Parameters** must contain a list of all possible values, separated by commas. For reference, the field **Parameters** must contain the name of the referenced form and, separated by a colon, the name of the field in the referenced form the values of which will appear in the select box. For example, if one would like to have all records created with the form „Employee" in the select box, the value of the field **Parameters** might be „Employee:lastName". In the select box, the values of the field „lastName" of all records of the type „Employee" would appear.

The field **Tool tip** specifies the text that will be displayed when the use moves the mouse cursor over the field.

The field **Order** specifies the order of the field as it will appear in the form. The sorting is lexicographic.

The field **Location** may have the value „form" or „everywhere". If the value is „form", the field will appear only in the form on the left side of the window. If the value is „everywhere", the field will appear both in the form and in the record list (as a column).

The field **Required** specifies whether the file must have a value for the record to be saved.

The field **Default value** specified the default value of the field in new records.

Sample JAM application

The JAM Designer tool comes with a simple example which models a book database shared among libraries. There are forms for the following entities:

- author,
- library,
- publisher,
- book.

The sample illustrates how relationships between forms are defined. In fact, the only form with references is **Publication**. It gets assigned an author, a publisher and, optionally, the libraries which possess that publication. The sample illustrates how **Forms** and **Form fields** are used.

Using JAM in Web applications

In JAM, the underlying network is organized in a peer-to-peer (P2P) manner, i.e., there is no server. However, most companies use a Web server which hosts a Web application that presents data dynamically. To facilitate the management of contents which will be presented on a Web page, JAM allows for integration with third-party software, especially Web servers.

Each instance of JAM provides a service point that can be accessed locally or over the network to read and/or modify workspace data. To allow for presentation of workspace data in a Web application, JAM comes with a pre-built Java library that can be utilized in servlets. With this library on the server side, one can built advanced Ajax-based Web applications, for example, with the Google Web Toolkit.

Once all forms of an application have been defined with the Designer tool, one can use the forms:

- in the rich client,
- in a custom Web application,
- on the iPhone/iPod touch (as an example, see the screenshots below).

Thus JAM lets you share data within a virtual workspace among multiple users and devices.

