The Matrex API

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What it is

As the main Matrex document says, Matrex is a **graphical tool** to show, organize and calculate big amounts of data.

Anyway, from version 1.0 final it is possible to use it as a library, without the GUI.

The Matrex library or **Matrex API is complete**. With it you can build projects, add matrices, functions, charts, presentations and timers.

But the most probable scenario, in my opinion, is to use the API to let an **application open an existing Matrex** project and use it to calculate. The application can be of any kind, included web services, desktop tools and, why not, spreadsheets. It can let the project calculate with or without threads.

So, for example:

● A, who is a Matrex user, builds a Matrex project to calculate a complex business function.

●A asks B, who is a developer, to make the function accessible in the web.

●B builds a web module who accesses the Matrex project through the Matrex API and uses the project to calculate the business function.

Structure

The Matrex system is not divided in the following jars:

- **matrex_api.jar** contains the Matrex API (packages matex.item, matrex.file)

- **matrex_fun.jar** contains the Matrex function templates (package matrex.fun)

- **matrex_gui.jar** contains the Matrex GUI (package matrex.gui)

- **matrex_cmd.jar** contains the Matrex_cmd code (package matrex.commandline)

To use the Matrex API you will need the first 2 packages.

How to use it

To understand how to use the Matrex API you have three sources:

- The **matrex_cmd** shell command

- The **Structure.pdf** document, which explains the internal structure of Matrex.

- The matrex code, in the **matrex.item** (Matrex project, Matrex items) , **matrex.file** (to load and write projects and items as files) and **matrex.fun** (the function templates) packages. I will let available also the javadoc documentation for this code.

In general, to let an application work with the matrex API, it should have access to:

• the **jars** matrex_api.jar and matrex_fun.jar.

•the **template** directory, containing the function templates.

•the **project** to work with.

Matrex_cmd

Matrex_cmd is a shell command (matrex_cmd.bat for Windows, matrex_cmd.sh for the *nix platforms) to use a Matrex project.

It uses the project wrapper in the **matrex.commandline** package.

It does not allow to add items to the project, but just to change the content of some project's matrices.

The syntax is (in this example for windows):

matrex_cmd.bat <projectPath> {-set<matrix name/package=filepath} {-get<matrix name/package=filepath}

where:

- **projectPath** is the (relative or absolute) path of the project.mxp file for the project to open.

- the **-set** parameter allows to set the content of a matrix of the project reading it from a file.

- the **-get** parameter allows to write the content of a matrix of the project to a file.

- **matrix** name/package is the complete name/package of a matrix, written as a series of texts separated by the "." (dot) character. For example "db.contract.dates", where "db.contract" is the package and "date" is the name.

- **filepath** is the (relative or absolute) path of the file that contains or will contain the matrix content.

The file that contains the matrix content has the follwing format:

- the matrix rows are separated by the newline character
- the matrix columns are separated by the tab character

For example, here is the content of a numeric matrix with 2 rows and 3 columns:

10	12	33
7	31	4

Matrex_cmd works in this way:

- For each **-set** parameter, **loads** the file content and fills the matrix with it (this does not work for calculated matrices, only for base matrices).
- Filling the matrices the project **automatically recalculates** the directly and indirectly dependent functions.
- When the last -set matrix has been filled, the project has been recalculated. At this point, for each **-get** parameter, matrex_cmd **stores** the content of the matrix in the file.

Matrex_cmd does not use **threads** in the calculation.

It is not possible because, since matrex_cmd **does not know** which -get matrices will be recalculated when it fills the -set matrices and how many times, it does not know when the project calculation is terminated.

On the other hand in this case threads would only **increment the calculation time**.

Future developments

The Matrex API will be used in the Matrex project as a base of the new **Matrex server** that will come in version 2.0 and possibly as interface to Matrex for **Excel and OpenOffice.org**.