JWTGen project
Web Application functional test code generator

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  - Embedded and real-time systems
  - Document management softwares
- Open Source philosophy
  - Integrate Open Source components
  - Contribute to the code, give conferences, write training courses
- Our contributions
  - JaasLounge : JAAS interoperability for Java EE
  - JASMINe, JShaft : Java EE cluster managment
  - JWT Gen : web application functional test generator

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Summary of talk

- Context of this project
- JWT Gen project
- JWT Gen tool
- Roadmap
- Demonstration

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Context of the JWT Gen project

- JWT Gen project targets the web applications
- Web applications are more and more used
- Web applications are more and more complex
  - New paradigms of interaction with the AJAX technologies
  - Interoperability for linking different web services
- Need to supply safe web applications
  - Reduce the bugs
  - Reduce the time of development of web applications
- **Solution** : integrate functional tests during the development process

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Functional Test Tools

- Testing tool : implicit approach
  - Record a sequence of user interactions (a trace of user interactions)
  - Add new tests
  - Test code is not available
  - Tools : Mercury WinRunner, IBM Rational Robot, Borland Silk Test
  - Not free
- Testing library : explicit approach
  - Based on the xUnit API
  - Need to write the test code
  - Tools : *HTTPUnit*, *WebUnit*, *HTMLUnit*
  - Free

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JWT Gen Approach

- JWT Gen : **J**ava **W**ebapp **T**est **Gen**erator
- Reduce time and cost of functional test writing phase
- Open Source Components xUnit
- Supply an end-user tool to generate automatically xUnit tests
- Extensible project : add new testing functionality features
- Category of JWT Gen users
  - Web application developers
  - Web application testers

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JWT Gen Approach

request

response

Proxy JWT Gen

request

response

Client via Web Browser

Server

Exchange object

eclipse

Test Warehouse

store

Core JWT Gen

generate

xUnit Code source

Generate testing code

Test Plug-in 1

Test Plug-in 2

Test Plug-in ..

Test Plug-in n

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Proxy and Core modules features

- Proxy : intercept requests and responses, generate exchange objects
  - A response can have different MIME types : HTML, CSS, GIF, PDF, ...
  - Need to configure the proxy in your browser to activate JWT Gen
  - No perturbation during the navigation entirely transparent
- Core : store exchange objects and tests
  - Determine which test plug-in can be used according to a specific MIME type (included in the response body)
  - Generate the code tests from plug-ins

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Plug-in architecture

- Enhance the functionalities of JWT Gen by new plug-ins
- Plug-in characteristics
  - Supply an « user friendly » interface
  - Associate with one or more several xUnit library(ies)
  - Generate readable xUnit test code
- JWT Gen supplies already two plug-ins
  - Regular expression plug-in
  - HTML plug-in

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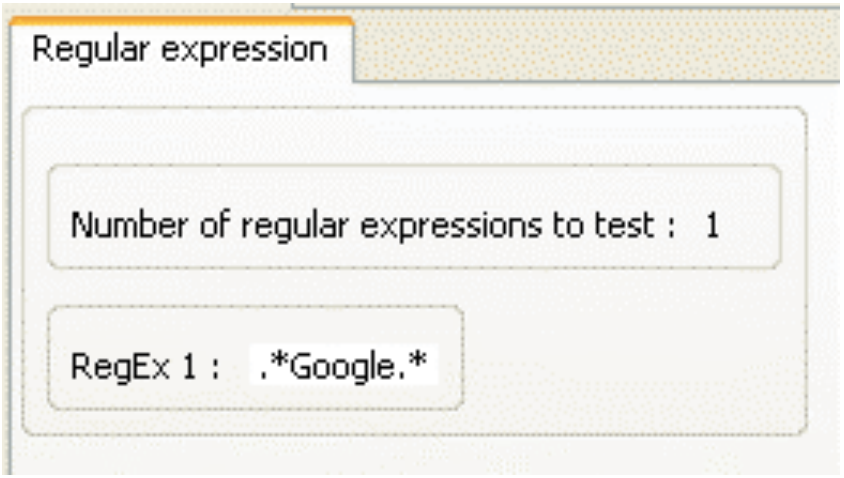
Regular Expression plug-in

- Allow to define regular expressions on a specific exchange with text MIME types
- User interface for the regular expression plug-in



- Examples
  - *.*google.** to search if the *google* string is present in the response
  - *<a href = "*\?param1** to search if param1 is used in links

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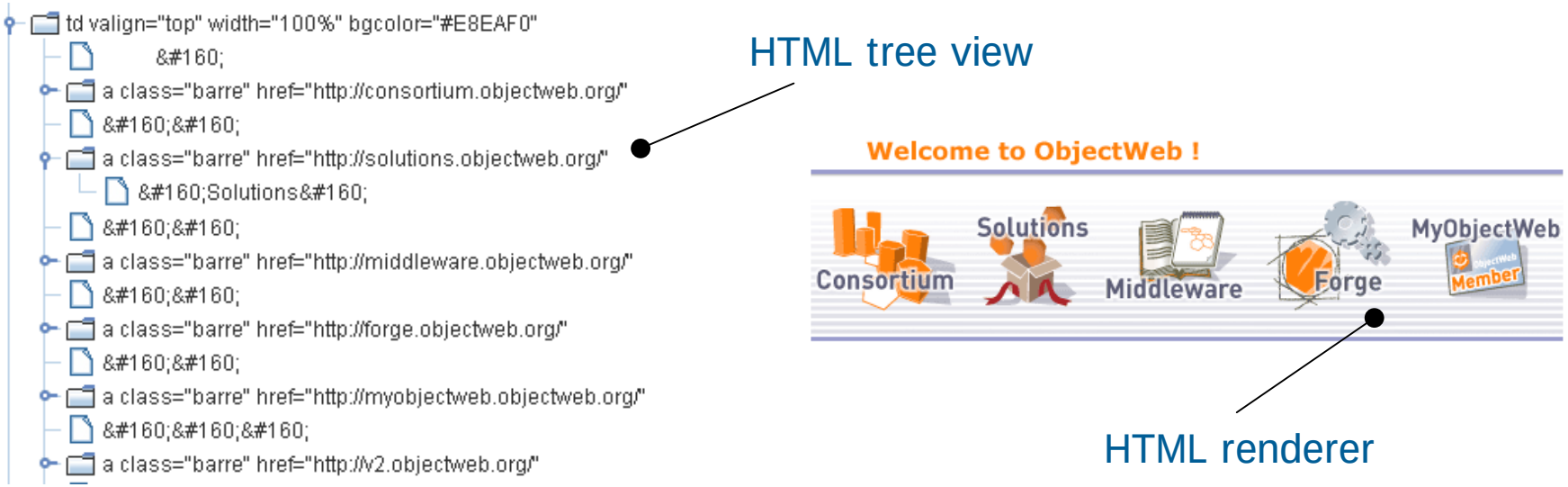
HTML plug-in

- Define tests on a specific HTML web page
- Enable when the MIME type of the response is HTML
- User interface for the HTML plug-in



- Examples
  - Search a specific label into a web page
  - Search a specific url into a web page
  - Check if a specific link is existing with a specific label

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JWT Gen tool

- Framework used : Eclipse Rich Client Platform
- Two deployment versions
  - Integrate JWT Gen into the IDE (plug-ins)
  - Supply a stand-alone application

- Eclipse architecture benefits
  - JWT Gen development based on a set of plug-ins
  - Eclipse architecture allows to add new plug-ins easily

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Current JWT Gen prototype

- JWT Gen tool can test
  - Form-based web applications with idempotent httprequest
- JWT Gen tool cannot test yet ...
  - Web applications with specific containers (flash, applet)
  - Web applications with dynamic navigation scheme (generated links, AJAX)
- What is working ?
  - Proxy module with HTTP protocol
  - Core module (store exchange, manage plug-ins, store tests, ...)
  - Regular expression

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Contributions

- Validation of the JWT Gen architecture
- JWT Gen user (developper and tester) validations
  - User interfaces functionnalities
  - Test requirements
- New JWT Gen plug-ins ...
  - Plug-in to test the pdf files (PDFUnit)
  - Plug-in to test the content of images
- User manual

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2007 Roadmap

- Handle HTTPS protocole
- Web applications including AJAX technologies (GWT, ...)
- New kinds of test plug-ins
- ...

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Demonstration

- Configure web browser
- Launch proxy module
- Navigate in a local web site
- Define some tests with the regular expression plug-in
- Define some tests with the HTML plug-in
- Generate functional test code
- Play the tests

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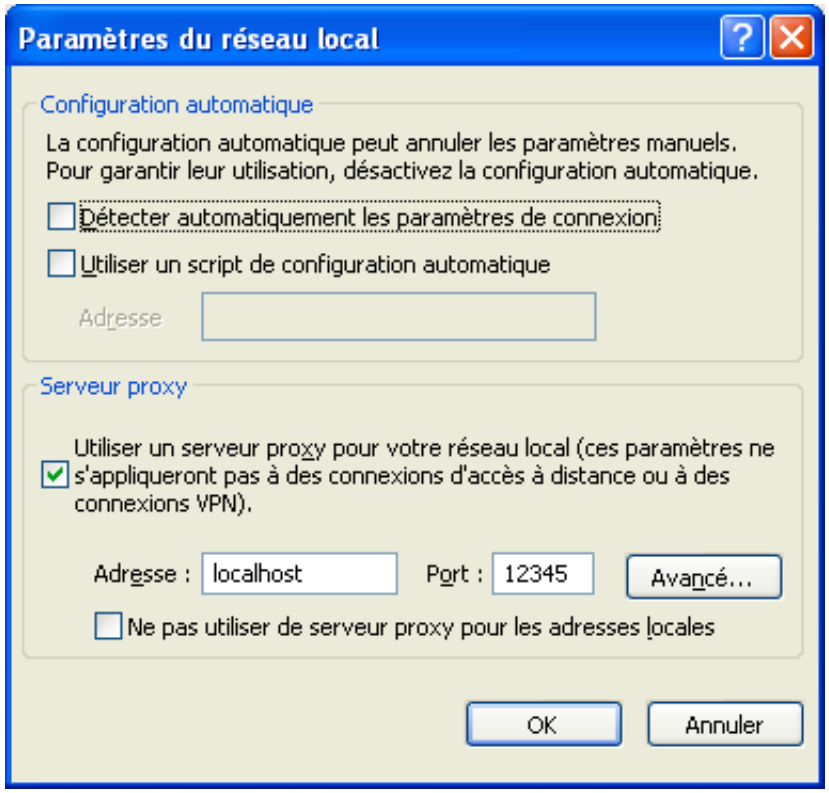
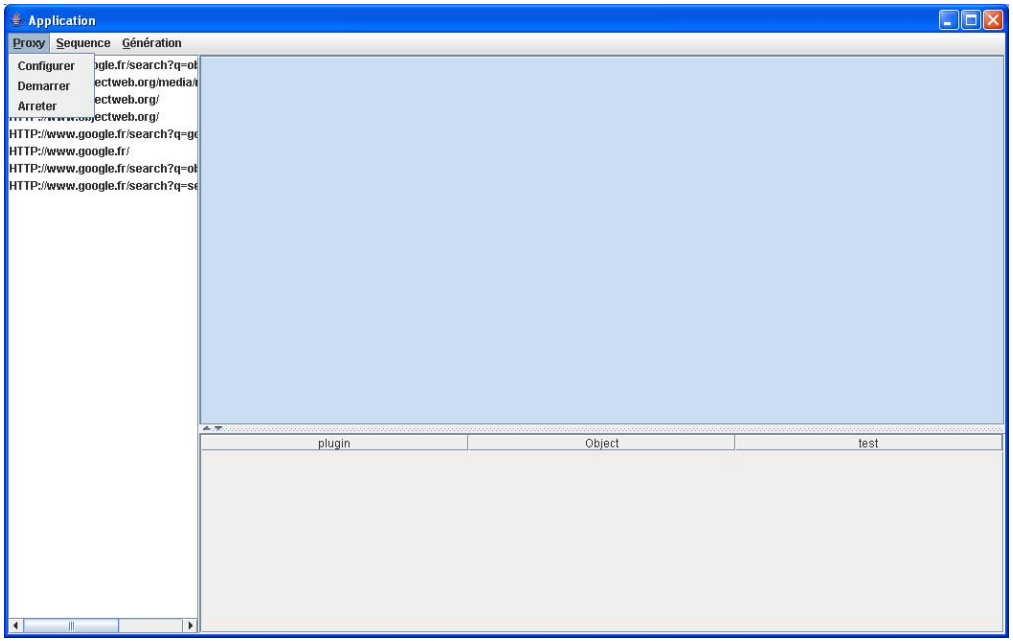
Demonstration : JWT Gen Swing





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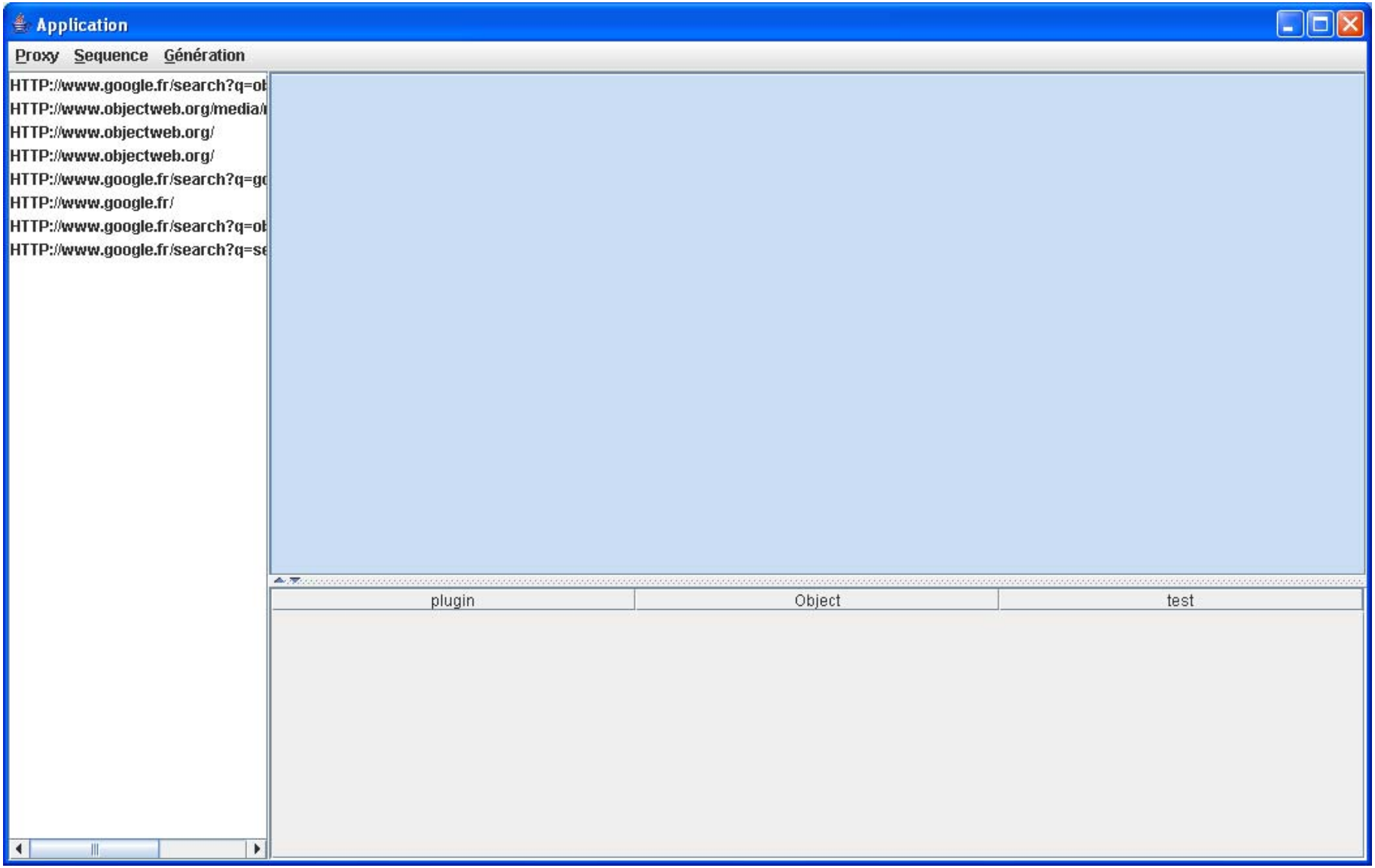

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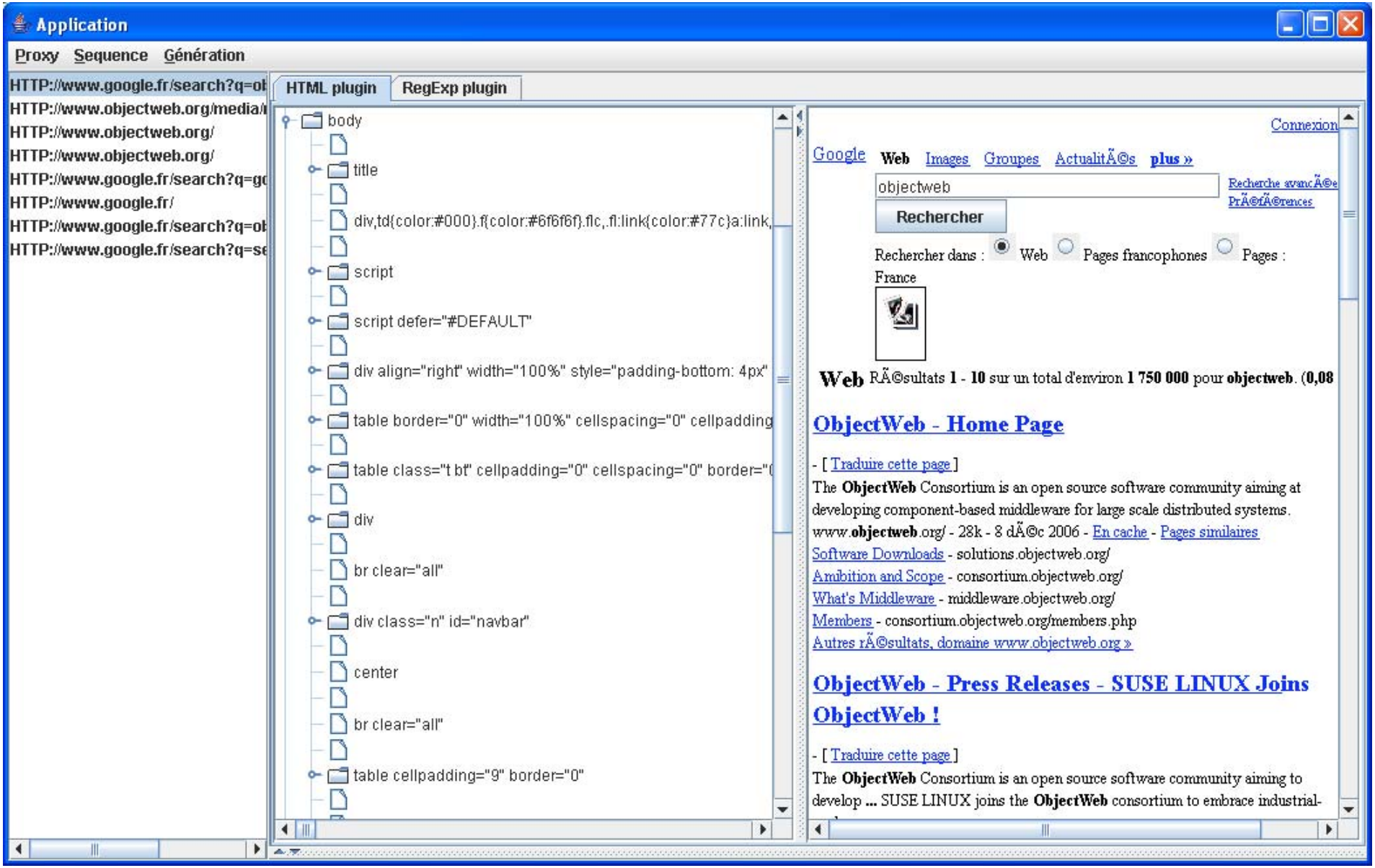

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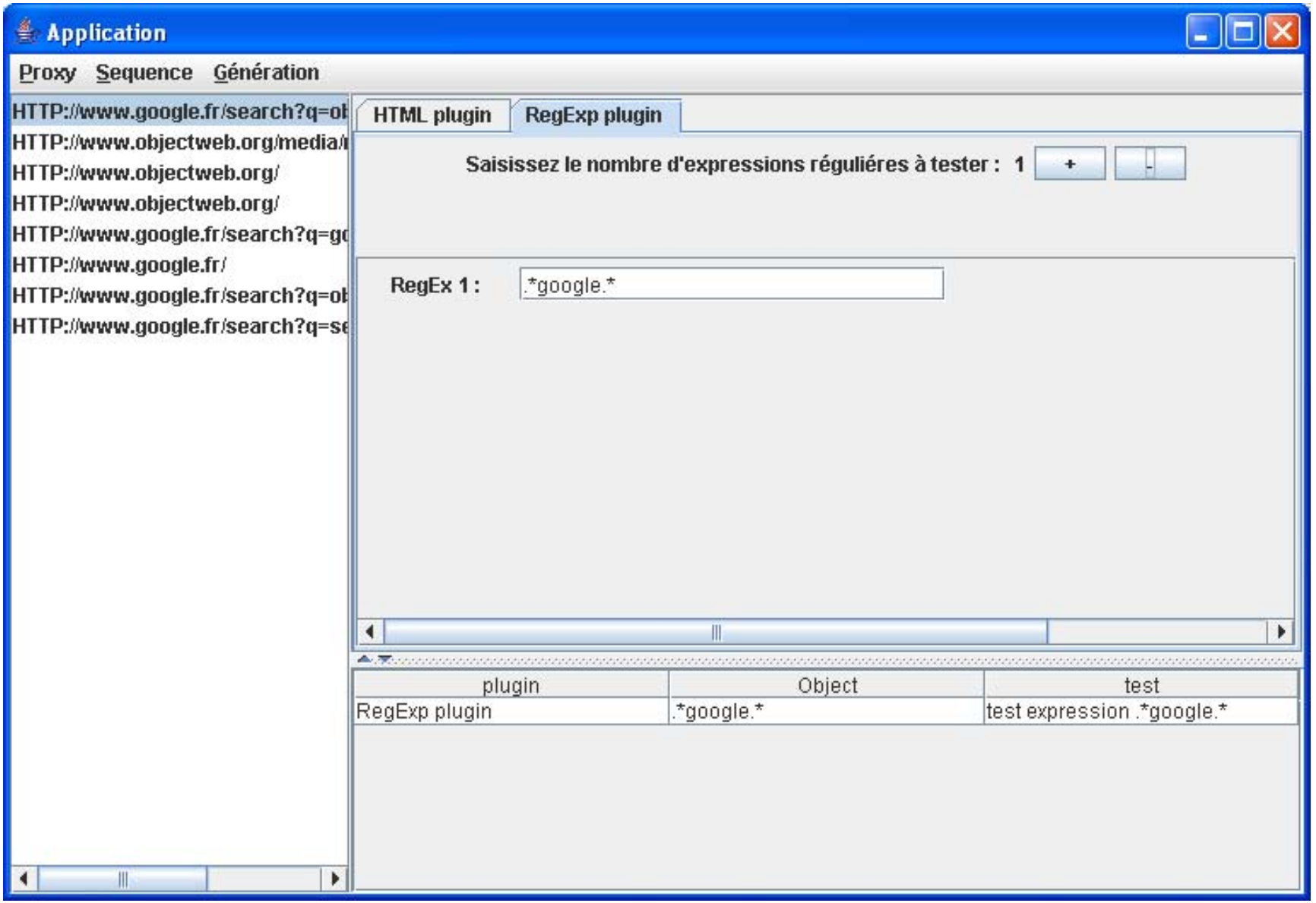
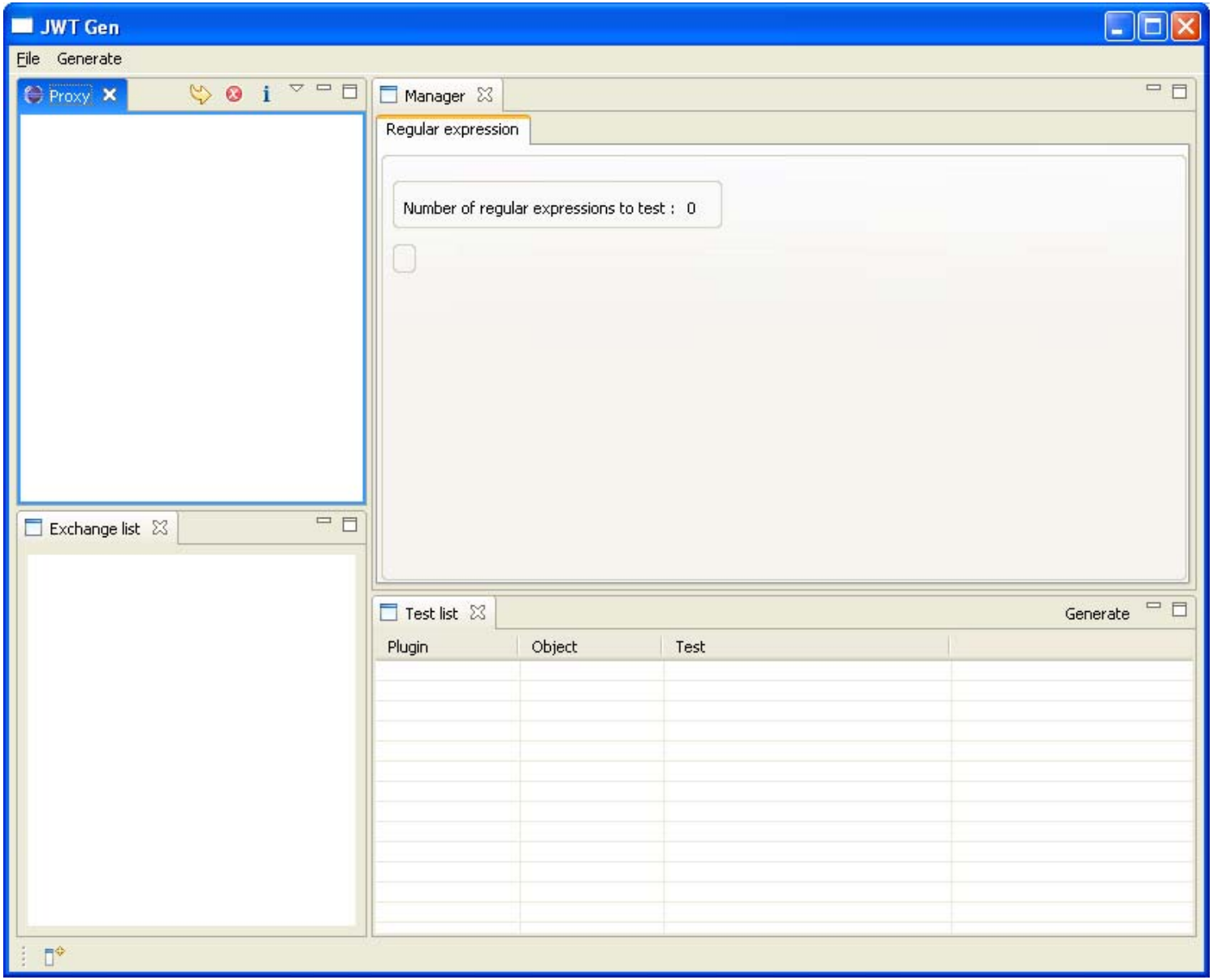
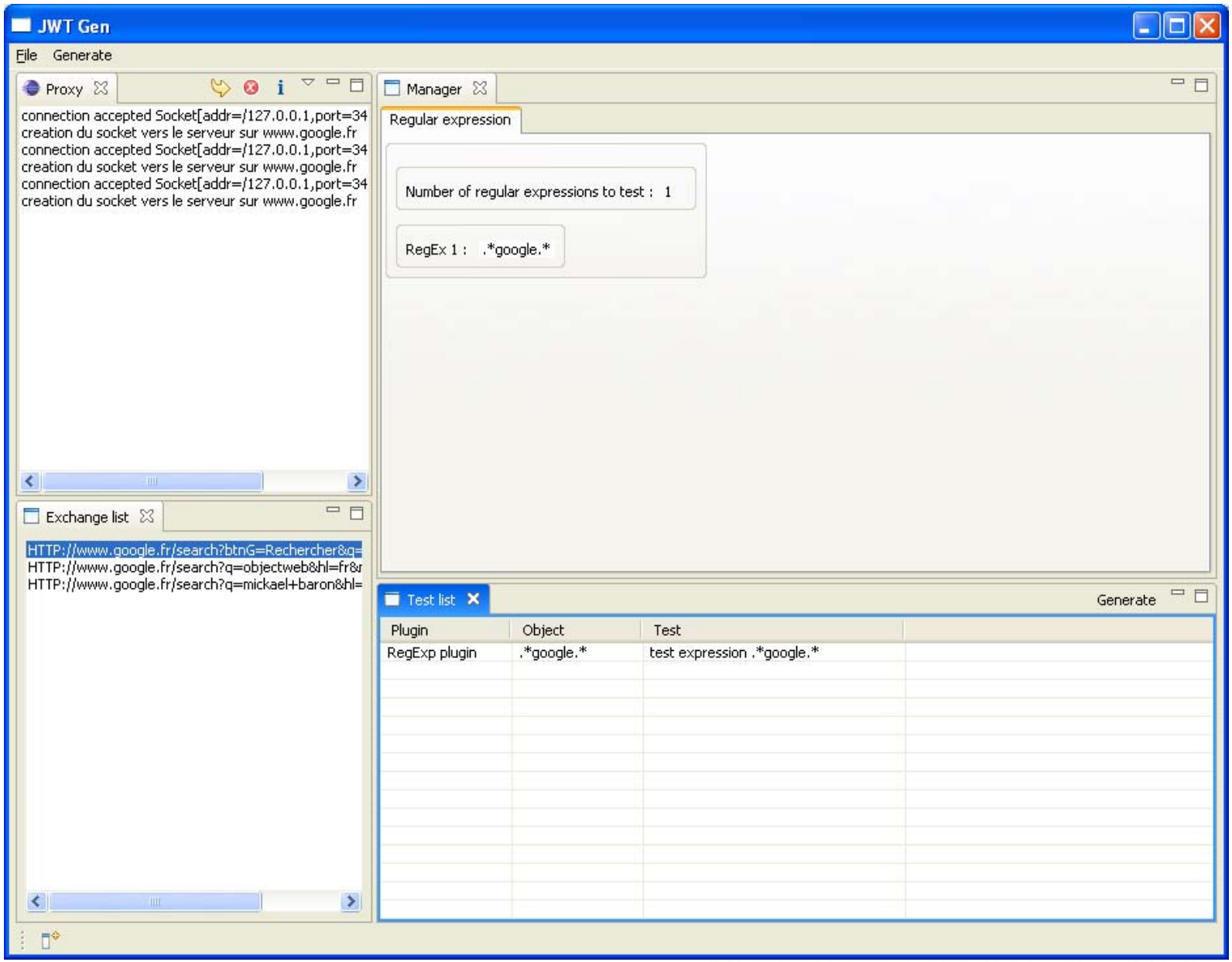


Demonstration : JWT Gen RCP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