

FOUNDATIONS OF SOFTWARE TESTING

Jmeter – powerful testing tool

Piotr Sobieraj
02/09.12.2016



AGENDA

1. Recap
2. HTTP POST
3. Database verification
4. External files
5. Performance

- DB connections and testing
- Using external files to upload the data
- Verifying HTML and web services responses
- Parsing documents
- Distributed performance tests
- Recording tests
- And many many more...

1. Download RApp zip from [GITRepository](#) (lesson-6)
2. Unzip the archive and go to tomcat bin directory (..rcapp_external_db\rcapp\apache-tomcat-6.0.44\bin)
3. Run command line from that path and start tomcat by executing „**startup**” command
4. Once Tomcat server will be started go following url:
<http://localhost:8080/registrationform/?contestId=1>
5. Check if you see the the screen similar to presented on the left
6. Administration panel should be available on
<http://localhost:8080/registrationpanel/>


Login: admin

Passw:


Registration	Questions	Answers	Prizes	View Selection
Refresh	First Name	Last Name	Email	Answer
10075	Test	Test	test@test.com	<p> <input type="checkbox"/> I hereby agree for my personal data, included in my job application, to be processed in line with the needs of recruitment, in accordance with the Law on Personal Data Protection of 29 August 1997 (Law Gazette from 2002, No.101, heading 526, as amended). </p> <p> <input type="button" value="Save"/> <input type="button" value="Reset"/> </p> <p> Terms and Conditions </p>
10076	Test	Test	test@test.com	<p> <input type="checkbox"/> I hereby agree for my personal data, included in my job application, to be processed in line with the needs of recruitment, in accordance with the Law on Personal Data Protection of 29 August 1997 (Law Gazette from 2002, No.101, heading 526, as amended). </p> <p> <input type="button" value="Save"/> <input type="button" value="Reset"/> </p> <p> Terms and Conditions </p>
10077	Test	Test	test@test.com	<p> <input type="checkbox"/> I hereby agree for my personal data, included in my job application, to be processed in line with the needs of recruitment, in accordance with the Law on Personal Data Protection of 29 August 1997 (Law Gazette from 2002, No.101, heading 526, as amended). </p> <p> <input type="button" value="Save"/> <input type="button" value="Reset"/> </p> <p> Terms and Conditions </p>
10078	Test	Test	test@test.com	<p> <input type="checkbox"/> I hereby agree for my personal data, included in my job application, to be processed in line with the needs of recruitment, in accordance with the Law on Personal Data Protection of 29 August 1997 (Law Gazette from 2002, No.101, heading 526, as amended). </p> <p> <input type="button" value="Save"/> <input type="button" value="Reset"/> </p> <p> Terms and Conditions </p>
10079	Test	Test	test@test.com	<p> <input type="checkbox"/> I hereby agree for my personal data, included in my job application, to be processed in line with the needs of recruitment, in accordance with the Law on Personal Data Protection of 29 August 1997 (Law Gazette from 2002, No.101, heading 526, as amended). </p> <p> <input type="button" value="Save"/> <input type="button" value="Reset"/> </p> <p> Terms and Conditions </p>
10080	Test	Test	test@test.com	<p> <input type="checkbox"/> I hereby agree for my personal data, included in my job application, to be processed in line with the needs of recruitment, in accordance with the Law on Personal Data Protection of 29 August 1997 (Law Gazette from 2002, No.101, heading 526, as amended). </p> <p> <input type="button" value="Save"/> <input type="button" value="Reset"/> </p> <p> Terms and Conditions </p>
10081	Test	Test	test@test.com	<p> <input type="checkbox"/> I hereby agree for my personal data, included in my job application, to be processed in line with the needs of recruitment, in accordance with the Law on Personal Data Protection of 29 August 1997 (Law Gazette from 2002, No.101, heading 526, as amended). </p> <p> <input type="button" value="Save"/> <input type="button" value="Reset"/> </p> <p> Terms and Conditions </p>
10082	Test	Test	test@test.com	<p> <input type="checkbox"/> I hereby agree for my personal data, included in my job application, to be processed in line with the needs of recruitment, in accordance with the Law on Personal Data Protection of 29 August 1997 (Law Gazette from 2002, No.101, heading 526, as amended). </p> <p> <input type="button" value="Save"/> <input type="button" value="Reset"/> </p> <p> Terms and Conditions </p>
10083	Test	Test	test@test.com	<p> <input type="checkbox"/> I hereby agree for my personal data, included in my job application, to be processed in line with the needs of recruitment, in accordance with the Law on Personal Data Protection of 29 August 1997 (Law Gazette from 2002, No.101, heading 526, as amended). </p> <p> <input type="button" value="Save"/> <input type="button" value="Reset"/> </p> <p> Terms and Conditions </p>
10084	Test	Test	test@test.com	<p> <input type="checkbox"/> I hereby agree for my personal data, included in my job application, to be processed in line with the needs of recruitment, in accordance with the Law on Personal Data Protection of 29 August 1997 (Law Gazette from 2002, No.101, heading 526, as amended). </p> <p> <input type="button" value="Save"/> <input type="button" value="Reset"/> </p> <p> Terms and Conditions </p>
10085	Test	Test	test@test.com	<p> <input type="checkbox"/> I hereby agree for my personal data, included in my job application, to be processed in line with the needs of recruitment, in accordance with the Law on Personal Data Protection of 29 August 1997 (Law Gazette from 2002, No.101, heading 526, as amended). </p> <p> <input type="button" value="Save"/> <input type="button" value="Reset"/> </p> <p> Terms and Conditions </p>
10086	Test	Test	test@test.com	<p> <input type="checkbox"/> I hereby agree for my personal data, included in my job application, to be processed in line with the needs of recruitment, in accordance with the Law on Personal Data Protection of 29 August 1997 (Law Gazette from 2002, No.101, heading 526, as amended). </p> <p> <input type="button" value="Save"/> <input type="button" value="Reset"/> </p> <p> Terms and Conditions </p>
10087	Test	Test	test@test.com	<p> <input type="checkbox"/> I hereby agree for my personal data, included in my job application, to be processed in line with the needs of recruitment, in accordance with the Law on Personal Data Protection of 29 August 1997 (Law Gazette from 2002, No.101, heading 526, as amended). </p> <p> <input type="button" value="Save"/> <input type="button" value="Reset"/> </p> <p> Terms and Conditions </p>

Using HTTP Request [POST] to register new user

1. Create an empty Test Plan and change its name to Test Plan – Task 3c
2. Save the test plan by the name of Task_3c.jmx.
3. Add Thread Group.
4. Add HTTP Request and change its name to HTTP Request – register user. Change the relevant settings as below:
5.
 - a. Server Name or IP: 127.0.0.1
 - b. Port Number: 8080
 - c. Protocol [http]: HTTP
 - d. Method: **POST**
 - e. Content encoding: UTF-8
 - f. Path: /registrationform/registrations
6. Switch onto Body Data tab and put there xml content
7. Run test plan – response code 415
8. Add HTTP Header Manager and parameter Content-Type: text/xml
9. Run Test plan and check if user was registered
10. Run test plan again – what happened?
11. Add Assertion for the Response code



```
<?xml version="1.0" encoding="UTF-8"?>
<REGISTRATION>
<FIRST_NAME>yourname</FIRST_NAME>
<LAST_NAME>yourlastname</LAST_NAME>
<EMAIL>your.mailj@gft.com</EMAIL>
<QUESTION>Which one of the following keywords
allows to sort the query
result?
GROUP BY
ORDER FROM
ASC BY
ORDER BY</QUESTION>
<CHALLENGE>null</CHALLENGE>
<ANSWER>null</ANSWER>
<QUESTION_ID>7</QUESTION_ID>
<ANSWER_INDEX>28</ANSWER_INDEX>
</REGISTRATION>
```



```
http://localhost:8080/registrationpanel/
Login: admin
Passw:
```

- Default Jmeter version comes with no database driver
- But it's fairly easy to add i.e MySQL one:
 - Go to <http://dev.mysql.com/downloads/file/?id=459313>
 - Download and unzip the driver
 - Copy jar file (mysql-connector-java-5.1.37-bin) to Jmeter lib directory
 - Restart Jmeter
- Main test plan elements when working with databases:
 - JDBC Connection Configuration
 - JDBC Request

JDBC Connection Configuration

Name: JDBC Connection Configuration

Comments:

Variable Name Bound to Pool

Variable Name:

Connection Pool Configuration

Max Number of Connections: 10

Pool Timeout: 10000

Idle Cleanup Interval (ms): 60000

Auto Commit: True

Transaction Isolation: DEFAULT

Connection Validation by Pool

Keep-Alive: True

Max Connection age (ms): 5000

Validation Query: Select 1

Database Connection Configuration

Database URL:

JDBC Driver class:

Username:

Password:

1. In Test Plan from previous exercise add new config element – JDBC Connection Configuration and fill connection parameters
2. Add JDBC Request from Samplers. Use VariableName from configuration and write simple select to check if your POST request was stored in DB
3. Using the Counter element register more users (counter should be used to make emails unique)
4. Create new JDBC Request to clear generated data (use the „like” operator to not delete other data!)

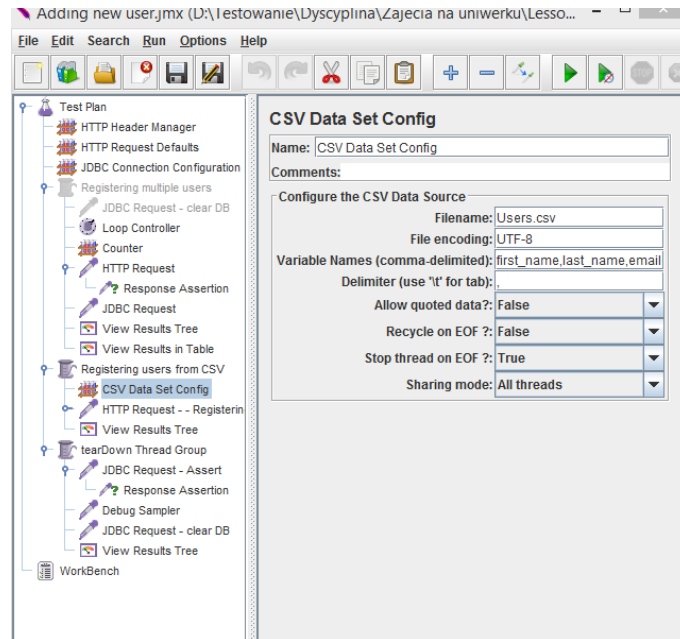
VariableName	RCappDB
Database URL	jdbc:mysql://db4free.net:3306/registrationsmob
JDBC Driver Class	com.mysql.jdbc.Driver
Username	rcapp
Password	Gfgjhjnybr!0

```
SELECT * FROM REGISTRATIONS WHERE EMAIL =  
'your_email';
```

Using external file in test scenario

Often in real world examples there is a common need to prepare and keep test data in external files

1. Create Users.csv file with few users data (first name, last name, email). Each user in new line and values separated by given delimiter (e.g. coma, pipe). Save file in the same place where JMX file is stored.
2. Add new Thread Group and disable recent one. **Check Forever checkbox.**
3. Add CSV Data Set Config component and provide filename, encoding(UTF-8), variable names(e.g. *first_name,last_name,email*) and delimiter parameters. Other flags set to:
Allow quoted data – False
Recycle on EOF – False
Stop thread on EOF – True
Sharing mode – All Threads
4. Copy HTTP Post from previous exercises and use email parameter in HTTP Request name and POST body
5. Add tearDown Thread Group
6. Add JDBC Request with Assertion element to check if users from CVS will be registered (use select count(*) and Jmeter variable assertion).
7. Add JDBC Request for clearing DB after test.
8. Add Result Tree for both Thread groups and run Test Plan



The assignment is to prepare a test plan which:

1. Registers 5 users in the application using the REST API.
 1. Checks in the database if the users are registered.
 2. The list of users is stored in external .csv file.
2. Cleans the database up once the test is done (use tearDown Thread Group).
3. Using the Summary Report listener prepare a report which comes with Average Response Time and Standard Deviation regarding the HTTP Request (this one which registers users).
4. Send the
 1. .jmx file
 2. .csv file
 3. the Summary Reportto piotr.sobieraj@gft.com no later than EOD of 23 Dec 2016.

Remark 1: to avoid race condition among other students you can use email with your initials, ex. for Jan Twardowsky it would be jnty@math.uni.lodz.pl.

Remark 2: please do not hesitate to drop me an email if anything is not clear.

Thank you

Piotr Sobieraj
GFT
Piotr.Sobieraj@gft.com