Gilles Querret • Riverside Software

#### Introduction to Git

PUG Challenge America 2019



#### Source code management, circa 1930



## From 2009 to 2019

StackOverflow trends



## From 2009 to 2019

Google trends

## From Bitkeeper To Git



#### StackOverflow



Things to remember

- \* Commit is a snapshot of all the files
- A commit only has parent(s) ; it doesn't know about children
- \* Git commands are manipulating a tree

#### Questions?

Thank you for coming !



## Initial History

- Each commit is a snapshot of all the files
- Each commit has an ID and author
- Each commit has exactly one parent

master ) 75bc573 Supplier form - Bob <bob@rssw.eu>

39f5a12 Customer form - Dan <dan@rssw.eu>

362190b About box - Carl <carl@rssw.eu>

ded73c0 Main window - Bob <bob@rssw.eu>

0b05c1c Initial commit - Alice <alice@rssw.eu>

\* Branch is just a tag...

master) a72c95a Supplier form - Bob <bob@rssw.eu>

34d7895 Customer form - Dan <dan@rssw.eu>

bb8eb6b About box - Carl <carl@rssw.eu>

d608962 Main window - Bob <bob@rssw.eu>

\* Branch is just a tag...

 which moves when you 'git commit' master ) 1acf40d Order form - Alice <alice@rssw.eu>

a72c95a Supplier form - Bob <bob@rssw.eu>

34d7895 Customer form - Dan <dan@rssw.eu>

bb8eb6b About box - Carl <carl@rssw.eu>

d608962 Main window - Bob <bob@rssw.eu>

 Creating a new branch is extremely cheap

e848158 Quick order form - Dan <dan@rssw.eu> feature1

master

1acf40d Order form - Alice <alice@rssw.eu>

a72c95a Supplier form - Bob <bob@rssw.eu>

34d7895 Customer form - Dan <dan@rssw.eu>

bb8eb6b About box - Carl <carl@rssw.eu>

d608962 Main window - Bob <bob@rssw.eu>

 And new features should always be added on a separate branch feature2) c5a6527 Ledger - Bob <bob@rssw.eu>

feature1) e848158 Quick order form - Dan <dan@rssw.eu>

master ) 1acf40d Order form - Alice <alice@rssw.eu>

a72c95a Supplier form - Bob <bob@rssw.eu>

34d7895 Customer form - Dan <dan@rssw.eu>

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d608962 Main window - Bob <bob@rssw.eu>



#### \* ALWAYS

# HEAD tag

| * | dd8957cf - | (2 | weeks ago)  | Next dev cycle – Gilles QUERRET (HEAD → master, origin/master, origin/HEAD)        |
|---|------------|----|-------------|--|
| * | 371bf899 - | (2 | weeks ago)  | Version 213 – Gilles QUERRET (tag: V213)   |
| * | aaeb518e - | (2 | weeks ago)  | Build with 12.1 - Gilles QUERRET   |
| * | 56e5c9dc - | (6 | weeks ago)  | ) Add Option node to PCTBinaryDump / PCTBinaryLoad (#378) – Gilles QUERRET         |
| * | 7ff870ce - | (6 | weeks ago)  | ) Set RCodeInfo buffer size from a Java property (#377) – Gilles QUERRET           |
| * | a4c35c89 - | (6 | weeks ago)  | ) Handle white spaces in Profiler:outputFile property (#376) - Gilles QUERRET      |
| * | c814cba6 - | (6 | weeks ago)  | ) Fix PCTDynamicRun issues (#375) - Gilles QUERRET                                 |
| * | da1eb340 - | (7 | weeks ago)  | ) BackgroundWorker thread fix – Bill Wang  |
|   | * 0055bfb0 | -  | (4 months a | ago) Test case – Gilles QUERRET (origin/bugfix/PCT-366)                            |
| / |            |    |             |  |
|   | * 30770550 | -  | (4 months a | ago) Test with Corretto 11 and Ant 1.10 - Gilles QUERRET (origin/Ant110Corretto11) |
| / |            |    |             |  |
| * | f459acc0 - | (8 | weeks ago)  | ) Support for OpenEdge 12.1 - Gilles QUERRET                                       |

# HEAD tag

| * | dd8957cf - | (2 | weeks ago)  | Next dev cycle – Gilles QUERRET (origin/master, origin/HEAD, master)                         |
|---|------------|----|-------------|--|
| * | 371bf899 - | (2 | weeks ago)  | Version 213 – Gilles QUERRET (tag: V213)   |
| * | aaeb518e - | (2 | weeks ago)  | Build with 12.1 - Gilles QUERRET   |
| * | 56e5c9dc - | (6 | weeks ago)  | Add Option node to PCTBinaryDump / PCTBinaryLoad (#378) - Gilles QUERRET                     |
| * | 7ff870ce - | (6 | weeks ago)  | Set RCodeInfo buffer size from a Java property (#377) – Gilles QUERRET                       |
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|   |            |    |             |  |
|   | * 30770550 | -  | (4 months a | <pre>go) Test with Corretto 11 and Ant 1.10 - Gilles QUERRET (origin/Ant110Corretto11)</pre> |
|   |            |    |             |  |
| * | f459acc0 - | (8 | weeks ago)  | Support for OpenEdge 12.1 - Gilles QUERRET   |

## Merging Step 1 - Common Ancestor

feature1e848158 Quick order form - Dan <dan@rssw.eu>1acf40d Order form - Alice <alice@rssw.eu>a72c95a Supplier form - Bob <bob@rssw.eu>34d7895 Customer form - Dan <dan@rssw.eu>bb8eb6b About box - Carl <carl@rssw.eu>d608962 Main window - Bob <bob@rssw.eu>ef8a526 Initial commit - Alice <alice@rssw.eu>



## Merging Step 1 - Common Ancestor

feature1) e848158 Quick order form - Dan <dan@rssw.eu>

1acf40d Order form - Alice <alice@rssw.eu>

a72c95a Supplier form - Bob <bob@rssw.eu>

34d7895 Customer form - Dan <dan@rssw.eu>

bb8eb6b About box - Carl <carl@rssw.eu>

d608962 Main window - Bob <bob@rssw.eu>

ef8a526 Initial commit - Alice <alice@rssw.eu>

(feature3) 0162894 Prep. DB Upgrade - Dan <dan@rssw.eu>

1acf40d Order form - Alice <alice@rssw.eu>

a72c95a Supplier form - Bob <bob@rssw.eu>

34d7895 Customer form - Dan <dan@rssw.eu>

bb8eb6b About box - Carl <carl@rssw.eu>

d608962 Main window - Bob <bob@rssw.eu>

# Merging Step 2 - New Commit

- 1 new merge commit, with two parents
- \* No impact on 0162894
- This commit doesn't know it has been merged



# Merging - Cont'd

 New commit on feature3 feature3) f478a23 DB Upgrade fix - Dan <dan@rssw.eu>

feature1) cae2a69 Include DB changes - Dan <dan@rssw.eu>

e848158 Quick order form - Dan <dan@rssw.eu>

0162894 Prep. DB Upgrade - Dan <dan@rssw.eu>

1acf40d Order form - Alice <alice@rssw.eu>

a72c95a Supplier form - Bob <bob@rssw.eu>

34d7895 Customer form - Dan <dan@rssw.eu>

bb8eb6b About box - Carl <carl@rssw.eu>

# Merging - Cont'd

 Look for common ancestor feature3) f478a23 DB Upgrade fix - Dan <dan@rssw.eu>

feature1) cae2a69 Include DB changes - Dan <dan@rssw.eu>

e848158 Quick order form - Dan <dan@rssw.eu>

0162894 Prep. DB Upgrade - Dan <dan@rssw.eu>

1acf40d Order form - Alice <alice@rssw.eu>

a72c95a Supplier form - Bob <bob@rssw.eu>

34d7895 Customer form - Dan <dan@rssw.eu>

bb8eb6b About box - Carl <carl@rssw.eu>

# Merging - Cont'd

#### Look for common ancestor

feature1 | f69bec7 Merge #2 - Dan <dan@rssw.eu>

(feature3) f478a23 DB Upgrade fix - Dan <dan@rssw.eu>

092538d Include DB changes - Dan <dan@rssw.eu>

e848158 Quick order form - Dan <dan@rssw.eu>

0162894 Prep. DB Upgrade - Dan <dan@rssw.eu>

1acf40d Order form - Alice <alice@rssw.eu>

a72c95a Supplier form - Bob <bob@rssw.eu>

34d7895 Customer form - Dan <dan@rssw.eu>

bb8eb6b About box - Carl <carl@rssw.eu>

#### Distributed Repositories

- \* Each developer has an entire copy of the repository
  - \* Or even more than one
- \* All commits are done locally
  - \* Not visible to anybody else
- Repositories have to be synchronized
  - Tree reconciliation

#### **Distributed Repositories**

- \* By convention, the "central" repository is called "origin"
- \* Push to origin means making your local commits public
- Fetch from origin means retrieving locally the remote commits



https://nvie.com/posts/a-successful-git-branching-model/









git fetch origin





#### Fetch & Rebase



#### Fetch & Rebase



#### Fetch & Rebase



|          | CAMMELIT                           | DATE         |
|----------|------------------------------------|--------------|
|          | COMMENT                            | DAIL         |
| Q        | CREATED MAIN LOOP & TIMING CONTROL | 14 HOURS AGO |
| 0        | ENABLED CONFIG FILE PARSING        | 9 HOURS AGO  |
| 0        | MISC BUGFIXES                      | 5 HOURS AGO  |
| 0        | CODE ADDITIONS/EDITS               | 4 HOURS AGO  |
| 0        | MORE CODE                          | 4 HOURS AGO  |
| Q I      | HERE HAVE CODE                     | 4 HOURS AGO  |
|          | AAAAAAA                            | 3 HOURS AGO  |
| 0        | ADKFJSLKDFJSDKLFJ                  | 3 HOURS AGO  |
| ¢        | MY HANDS ARE TYPING WORDS          | 2 HOURS AGO  |
| <b>¢</b> | HAAAAAAAANDS                       | 2 HOURS AGO  |
|          | AS A PROJECT DRAGS ON. MY GIT      | COMMIT       |
|          | MESSAGES GET LESS AND LESS INFO    | RMATIVE      |



dev





# Staging



- GitHub / BitBucket / GitLab concept
- \* Allows code review from a Web UI
- \* Which then triggers server-side Git actions

| <b>ception ir</b><br>364  | BackgroundWorker when using multiple t  | hreads   | E    |
|---|---|--|------|
| Merged gquerret r   | nerged 3 commits into Riverside-Software:master from droppedcalls:master 🛱 on 15 Aug  |  |      |
| Conversation 8  | ◆ Commits 3 - Checks 0 - Files changed 9  | +175 <mark>-26</mark>                                |      |
| droppedcalls  | on 1 May • edited by gquerret - Contributor + 😄 💉 …   | Reviewers  |      |
| Descrip   | otion   | Assignees – assign yourself                          |      |
| When running following exce   | multiple threads on some systems, in particular our Red Hat Jenkins build agents, the ption would occur:  | Labels   |      |
| [PCTCompil<br>[PCTCompil  | e] Exception in thread "Thread-1351" java.lang.NullPointerException<br>e] at com.phenix.pct.BackgroundWorker.listen(BackgroundWorker.java:105)      | Projects<br>None yet                                 |      |
| [PCTCompil<br>[PCTCompil  | at com.phenix.pct.PClBgRun%Listenerihread\$1.run(PClBgRun.java:686)<br>e] at java.lang.Thread.run(Thread.java:748)                                  | Milestone<br>No milestone                            |      |
| Fixes #363  | nange   | Notifications Co<br>You're receiving notifications b | usto |
| Bug fix (new particular descent and the second s | on-breaking change which fixes an issue)  | you modified the open/close st                       | ate  |
| Checkl  | ist:  | Mark as unread                                       |      |
| <ul><li>My branch</li><li>My comm</li><li>My code f</li></ul>   | is started from the latest commit in master<br>t history is clean<br>ollows the style guidelines of this project                                    | 4 participants                                       |      |
| <ul> <li>I have per</li> <li>I have con</li> <li>I have made</li> </ul>   | formed a self-review of my own code<br>Imented my code, particularly in hard-to-understand areas<br>le corresponding changes to the documentation   | A Lock conversation                                  |      |
| <ul> <li>My chang</li> <li>I have add</li> <li>New and e</li> </ul>   | es generate no new warnings<br>ed tests that prove my fix is effective or that my feature works<br>existing unit tests pass locally with my changes |  |      |

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| 16       17       18       19       20       6       21       22       22       23       103       103       104       105       106       107       108       109       5       110       6       111       7       28       20       4       409       5       410       6       411       412       413       414       415       416       417       418       419       420  | <pre>- <classpathentry bin"="" kind="lb" lib"="" path="lib/objene&lt;br&gt;- &lt;classpathent"></classpathentry><br/><br/>@@ -102,6 +102,11 @@<br/> <pathelement <br="" location="lib/testng-6.13.1.ja"> <pathelement <br="" location="lib/ini4j-0.5.1.jar"> <pathelement <br="" location="lib/ini4j-0.5.1.jar"> <pathelement <br="" location="lib/ini4j-0.5.1.jar"> <pathelement byte-buddy-1.9.1<br="" lib="" location="lib/byte-buddy-1.9.1&lt;br&gt; &lt;pathelement location="> <pathelement byte-buddy-agent<br="" lib="" location="lib/byte-buddy-agent&lt;br&gt; thelement location="> <pathelement byte-buddy-agent<br="" lib="" location="lib/byte-buddy-agent&lt;br&gt; thelement location="> thelement location="lib/byte-b</pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pre>   | <pre>co-core-3.0.0.jar";<br/>puddy-1.9.14.jar"/s<br/>puddy-agent-1.9.14.<br/>est-2.1.jar"/&gt;<br/>esis-2.6.jar"/&gt;<br/>*<br/>*<br/>0.0.jar" /&gt;<br/>*<br/>*<br/>-1.9.14.jar" /&gt;<br/>*<br/>*<br/>-1.9.14.jar" /&gt;<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*<br/>*</pre>   | /><br>><br>.jar"/> |                     | Viewed ····            |
| 17       18       19       20       6     21       7     22       22     102       23     103       4     104       107     108       107     108       107     108       108     107       108     109       5     110       6     111       7     112       28     102       38     109       5     410       6     411       412     413       413     414       415     416       417     418       418     420   | <pre>- <ctasspathentry'kind='lb'path='lb byte-b<br="">- <classpathentry'kind='lb' '<br="" kind="lb" path="lb">(classpathe)<br/></classpathentry'kind='lb'></ctasspathentry'kind='lb'path='lb></pre>   | <pre>buddy_1.9,14.jar'/2 buddy_agent_1.9,14. est-2.1.jar"/&gt; est-2.1.jar"/&gt; estis=2.6.jar"/&gt; buddy_agent_1.9,14. estis=2.6.jar"/&gt; buddy_agent_1.9 buddy_agent_1</pre>   | ><br>.jar"/>       |                     | Viewed ····            |
| 10       19       20       21       22       102       23       103       104       105       106       107       108       109       101       102       103       104       105       106       107       108       109       5       111       7       123       24       409       5       410       411       412       413       414       415       416       417       418       419       420  | <pre>classpathentry kind="lib" path="lib/hamcre"</pre>  | <pre>st-2.1.jar"/&gt; est-2.1.jar"/&gt; est-2.6.jar"/&gt; es</pre>   |                    |                     | Viewed ····            |
| 20       2       22       22       22       102       103       104       105       106       107       108       109       5       110       6       111       7       28       40       410       411       412       413       414       415       416       417       418       420   | <pre>- <classpathentry kind="lib" output"="" path="bin"></classpathentry><br/><br/>build.xml @<br/>@@ -102,6 +102,11 @@<br/> <pathelement <br="" location="lib/testng-6.13.1.ja"> <pathelement <br="" location="lib/ini4j-0.5.1.jar"> <pathelement <br="" location="lib/ini4j-0.5.1.jar"> <pathelement byte-buddy-1.9.1<br="" lib="" location="lib/mockito-core-3.0&lt;br&gt; &lt;pathelement location="> <pathelement byte-buddy-agent<br="" lib="" location="lib/byte-buddy-1.9.1&lt;br&gt; &lt;pathelement location="> <pathelement byte-buddy-agent<br="" lib="" location="lib/byte-buddy-agent&lt;br&gt; &lt;pathelement location="> <pathelement location="lib/byte-buddy-agent&lt;br&gt; total the total total set to a total se&lt;/td&gt;&lt;td&gt;&lt;pre&gt;sr'' /&gt; sr'' /&gt; ''/&gt; 0.0.jar'' /&gt; l4.jar'' /&gt; t-1.9.14.jar'' /&gt; e'' /&gt; pr'' /&gt; pr'' /&gt; pr'' /&gt; pr'' /&gt; &lt;/pre&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;Viewed ···&lt;/td&gt;&lt;/tr&gt;&lt;tr&gt;&lt;td&gt;6     21       7     22       22     102       23     103       4     104       107     105       108     107       109     101       5     110       6     111       7     112       28     100       109     111       7     112       84     409       5     410       6     411       7     412       413     414       415     416       417     418       418     420&lt;/td&gt;&lt;td&gt;&lt;pre&gt;     &lt;classpathentry kind=" output"="" path="bin"></pathelement>      build.xml      @@ -102,6 +102,11 @@</pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pathelement></pre>  | <pre>hr" /&gt; '-/&gt; l4.jar" /&gt; t-1.9.14.jar" /&gt; e-1.9.14.jar" /&gt; er" /&gt; br" /&gt; br" /&gt; br" /&gt; br" /&gt; </pre>  |                    |                     | Viewed ····            |
| 7     22       22     102       23     103       4     104       103     103       104     104       105     106       107     108       109     107       101     107       102     111       103     111       104     409       5     410       6     411       7     412       413     414       415     416       417     418       418     420  | <br>build.xml<br>@@-102,6.+102,11.@@<br>  | <pre>%***/&gt; %*/&gt; %**/&gt; %**/&gt; %**/&gt; %***/&gt; %****/&gt; %*****/&gt; %*****/&gt; %*****/&gt; %*****/&gt; %*****/&gt; %*****/&gt; %*****/&gt; %**********</pre>   |                    |                     | Viewed ····            |
| 22         102           102         103           103         103           104         104           105         106           107         108           109         109           5         110           6         111           7         4           4         409           5         410           6         411           413         413           414         415           416         417           418         420  | <pre>build.xml C<br/>@@102,6`+102,11`@@<br/><pathelement`location="lib testng-6.13.1.ja"<br=""><pathelement`location="lib in14j-0.5.1.jar"<br=""><pathelement`location="lib guava.jar"=""></pathelement`location="lib><br/><pathelement`location="lib mockito-core-3.0<br=""><pathelement`location="lib byte-buddy-1.9.1<br=""><pathelement`location="lib byte-buddy-agent<br=""><pathelement`location="lib byte-buddy-agent<br=""><pathelement`location="lib byte-buddy-agent<br=""><pathelement`location="lib byte-buddy-agent<br=""><pathelement`location="lib objenesis-2.6.ja<br=""><br/>&lt;<target `name="init" description="Initialize PR&lt;br&gt;@@'-404,7`+409,22`@@&lt;/pre&gt;&lt;/td&gt;&lt;td&gt;ar"></target><br/>''/&gt;<br/>0.0.jar" /&gt;<br/>14.jar" /&gt;<br/>t=1.9.14.jar" /&gt;<br/>"' /&gt;<br/>br" /&gt;<br/>PCT builder" depend</pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pre>   |  |                    | Viewed ····         |                        |
| 22     Image: state st  | <pre>build.xml C<br/>@@102,6`+102,11`@@<br/><pathelement`location="lib testng-6.13.1.ja<br=""><pathelement`location="lib ini4j-0.5.1.jar"<br=""><pathelement`location="lib guava.jar".=""></pathelement`location="lib><br/><pathelement`location="lib mockito-core-3.0<br=""><pathelement`location="lib byte-buddy-1.9.1<br=""><pathelement`location="lib byte-buddy-agent<br=""><pathelement`location="lib byte-buddy-agent<br=""><pathelement`location="lib byte-buddy-agent<br=""><pathelement`location="lib byte-buddy-agent<br=""><pathelement`location="lib byte-buddy-agent<br=""><pathelement`location="lib objenesis-2.6.ja<br=""><br/>&lt;<target `name="init" description="Initialize PR&lt;br&gt;@@'-404,7`+409,22`@@&lt;/pre&gt;&lt;/td&gt;&lt;td&gt;ar"></target><br/>''/&gt;<br/>0.0.jar" /&gt;<br/>t-1.9.14.jar" /&gt;<br/>t-1.9.14.jar" /&gt;<br/>ar" /&gt;<br/>PCT builder" depend</pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pathelement`location="lib></pre>  |  |                    | Viewed ····         |                        |
| 2         102           102         103           103         103           103         103           104         104           105         106           107         108           109         101           101         111           7         120           4         409           5         410           6         411           413         414           415         416           417         418           418         419           418         419   | <pre>@@ -102,6 * +102,11 @@</pre>   | ar" /><br>'//><br>0.0.jar" /><br>14.jar" /><br>t=1.9.14.jar" /><br>t=1.9.14.jar" /><br>ar" /><br>PCT builder" depend   |                    |                     |                        |
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| 2     102       3     103       4     104       106     107       108     109       5     111       7     112       4     409       5     410       6     411       7     412       413     414       415     416       417     418       418     419   | <pre>cpathelement location="lib/testng-6.13.1.ja<br/>cpathelement location="lib/ini4j-0.5.1.jar"<br/>cpathelement location="lib/guava.jar" /&gt;<br/>cpathelement location="lib/mockito-core-3.0<br/>cpathelement location="lib/byte-buddy-1.9.1<br/>cpathelement location="lib/byte-buddy-agent<br/>cpathelement location="lib/byte-buddy-agent<br/>cpathelement location="lib/hamcrest-2.1.jar"<br/>cpathelement location="lib/objenesis-2.6.ja<br/>compathelement location="lib/objenesis-2.6.ja<br/>compathelement"<br/>carget name="init" description="Initialize Property<br/>@@ -404,7 +409,22 @@</pre>  | <pre>%'/&gt; %'/&gt; %'/&gt; %'/&gt; %'/&gt; %'/&gt; %''/&gt; %''/&gt; %''/&gt; %''/&gt; %''/&gt; %'''/&gt; </pre>   |                    |                     |                        |
| 3     103       3     103       4     104       106     107       108     109       5     111       7     112       4     409       5     410       6     411       7     412       413     414       415     416       417     418       418     419   | <pre>cpathelement location="lib/ini4j-0.5.1.jar" cpathelement location="lib/guava.jar" /&gt; cpathelement location="lib/mockito-core-3.0 cpathelement location="lib/byte-buddy-1.9.1 cpathelement location="lib/byte-buddy-agent cpathelement location="lib/hamcrest-2.1.jar" cpathelement location="lib/objenesis-2.6.ja c/path&gt; carget name="init" description="Initialize Pr @@ -404,7 +409,22 @@ </pre>  | '/><br>0.0.jar"/><br>14.jar"/><br>:-1.9.14.jar"/><br>*"/><br>hr"/><br>PCT:builder".depend  |                    |                     |                        |
| 4 104<br>105<br>106<br>107<br>108<br>109<br>5 111<br>7 112<br><b>2</b><br><b>2</b><br><b>2</b><br><b>2</b><br><b>2</b><br><b>2</b><br><b>3</b><br><b>4</b><br>4 09<br>5 410<br>6 411<br>7 <b>4</b><br>4 10<br><b>4</b><br>4 10<br><b>4</b><br><b>1</b><br><b>1</b><br><b>1</b><br><b>1</b><br><b>1</b><br><b>1</b><br><b>1</b><br><b>1</b><br><b>1</b><br><b>1</b>  | <pre>cpathelement location="lib/guava.jar" /&gt; cpathelement location="lib/mockito-core-3.0 cpathelement location="lib/byte-buddy-1.9.1 cpathelement location="lib/byte-buddy-agent cypathelement location="lib/hamcrest-2.1.jar" cpathelement location="lib/objenesis-2.6.ja c </pre>   | 0.0.jar"·/><br>14.jar"·/><br>:-1.9.14.jar"·/><br>*"·/><br>ar"·/><br>PCT·builder"·depend  |                    |                     |                        |
| 105       106       107       108       109       5       111       7       112       2       2       4 <td><pre>cpathelement location="lib/mockito-core-3.0</pre></td> <td>0.0.jar"/&gt;<br/>14.jar"/&gt;<br/>:-1.9.14.jar"·/&gt;<br/>*"·/&gt;<br/>ar"·/&gt;<br/>PCT·builder"·depend</td> <td></td> <td></td> <td></td>  | <pre>cpathelement location="lib/mockito-core-3.0</pre>  | 0.0.jar"/><br>14.jar"/><br>:-1.9.14.jar"·/><br>*"·/><br>ar"·/><br>PCT·builder"·depend  |                    |                     |                        |
| 100       108       109       5     110       6     111       7     112       2     2       4     409       5     410       6     411       7     412       413     414       415     416       417     418       419     420   | <pre>cpathelement'tocarion= 'lib/byte=buddy=1.9.1<pathelement'location="lib byte="buddy=agent&lt;pathelement'location=&quot;lib/hamcrest=2.1.jar'&lt;pathelement'location=&quot;lib/bbjenesis=2.6.ja&lt;/path"><target description="Initialize Pr @@'-404,7'+409,22'@@&lt;/pre&gt;&lt;/td&gt;&lt;td&gt;&lt;pre&gt;(4.jar '/&gt; :-1.9.i4.jar" name="init"></target> ''' /&gt; ir" /&gt; PCT builder" depend</pathelement'location="lib></pre>   |  |                    |                     |                        |
| 108       108       108       109       5     110       6     111       7     112       27     27       28     409       5     410       6     411       7     412       413     414       415     416       417     418       419     420  | <pre>call of the second second</pre>  | PCT-builder"-depend  |                    |                     |                        |
| 109       110       111       112       111       112       112       112       112       112       112       112       112       112       112       112       112       112       112       112       112       112       113       114       115       116       117       118       119       120   | <pre>contraction to control = contro</pre>  | pr"/>  |                    |                     |                        |
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| 6     111       7     112       112     112       112     112       112     112       111     110       111     110       111     111 <td><pre>&lt;<target .depend<="" description="Initialize P&lt;br&gt;@@ -404,7 +409,22 @@&lt;/pre&gt;&lt;/td&gt;&lt;td&gt;℃T:builder" name="init" td=""><td></td><td></td><td></td></target></pre></td>  | <pre>&lt;<target .depend<="" description="Initialize P&lt;br&gt;@@ -404,7 +409,22 @@&lt;/pre&gt;&lt;/td&gt;&lt;td&gt;℃T:builder" name="init" td=""><td></td><td></td><td></td></target></pre>   |  |                    |                     |                        |
| 7     112       23     4       4     409       5     410       6     411       7     7       412     413       413     414       415     416       417     418       418     419       419     420  | <pre>~<target description="Initialize P @@ -404,7 +409,22 @@&lt;/pre&gt;&lt;/td&gt;&lt;td&gt;CT builder depend&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;/tr&gt;&lt;tr&gt;&lt;td&gt;283           24         409           5         410           6         411           7         412           413         414           415         416           417         418           418         419           418         412&lt;/td&gt;&lt;td&gt;@@`-404,7`+409,22`@@&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;ds=" init-prope<="" name="init" td=""><td>erties"&gt;</td><td></td></target></pre>  | erties">   |                    |                     |                        |
| 4         409           5         410           6         411           7         412           413         414           415         416           417         418           419         420   |   |  |                    |                     |                        |
| 5 410<br>6 411<br>7 412<br>413<br>414<br>415<br>416<br>417<br>418<br>419<br>420   | <pre><zinfileset dir="\${build=test}" includes="&lt;/pre"></zinfileset></pre>   | "**/*" nrefix="bui   | ild/test":/>       |                     |                        |
| 6 411<br>7 412<br>413<br>414<br>415<br>416<br>417<br>418<br>419<br>420  | <pre></pre>   | prefix="testbox" />  | >                  |                     |                        |
| 7 412<br>413<br>414<br>415<br>416<br>417<br>418<br>419<br>420   | <pre><zipfileset dir="\${src.progress}" include<="" pre=""></zipfileset></pre>  | es="Consultingwerk/  | /**/*" prefix:     | ="testbox/ClassDocu | nentation/test3/src"/  |
| 412<br>413<br>414<br>415<br>416<br>417<br>418<br>419<br>420   | <pre>cipfileset.dir="lib" includes="ast.jar,ast.jar"</pre>  | ast-dependencies.ja  | ar,ini4j-0.5.      | L.jar,guava.jar,tes | tng-6.13.1.jar,jcomman |
| 413<br>414<br>415<br>416<br>417<br>418<br>419<br>420  | <pre>compare the set of the set o</pre>  |  |                    |                     |                        |
| 414<br>415<br>416<br>417<br>418<br>419<br>420   | <pre><include name="ast.jar"></include></pre>   |  |                    |                     |                        |
| 415<br>416<br>417<br>418<br>419<br>420  | <pre>include name="ast-dependencies.jar" /&gt;</pre>  | •  |                    |                     |                        |
| 416<br>417<br>418<br>419<br>420   | <pre><include name="ini4j-0.5.1.jar"></include></pre>   |  |                    |                     |                        |
| 417<br>418<br>419<br>420  | <pre><include name="guava.jar"></include> </pre>  |  |                    |                     |                        |
| 419   | <include:name="testing=0.13.1.jar"></include:name="testing=0.13.1.jar">   |  |                    |                     |                        |
| 420   | <pre>sinclude:name="iacocoant=0.8.4.jar"/&gt;</pre>   |  |                    |                     |                        |
|   | <pre>include name="xmltask.iar"/&gt;</pre>  |  |                    |                     |                        |
| 421   | <pre><include <="" name="mockito-core-3.0.0.jar" pre=""></include></pre>  | />   |                    |                     |                        |
| 422   | <pre>include name="objenesis-2.6.jar" /&gt;</pre>   |  |                    |                     |                        |
| 423   | <pre>include name="hamcrest-2.1.jar" /&gt;</pre>  |  |                    |                     |                        |
| 424   | <pre>include name="byte-buddy-1.9.14.jar" /</pre>   | 1  |                    |                     |                        |
| 425   | standard and the second life as the data second at a second   | 2  |                    |                     |                        |
| 426   | <include name="byte-buddy-agent-1.9.14.&lt;/td&gt;&lt;td&gt;jar"></include>   |  |                    |                     |                        |
| 427   | <pre><include *.pl"="" name="byte-buddy-agent-1.9.14.&lt;br&gt;&lt;include name="></include></pre>  | jar" />  |                    |                     |                        |
| 9 429   | <pre><include *.pl"·="" name="byte=buddy-agent=1.9.14.&lt;br&gt;&lt;include name="></include><br/><!--/inp<br--></pre>  | jar" />  |                    |                     |                        |
| 0 430   | <pre><include *.pl"="" name="byte=buddy-agent=1.9.14.&lt;br&gt;&lt;/include name="></include><br/><br/><br/></pre>  | jar" />  |                    |                     |                        |





