Open Source Project CO328 Software Engineering

M.D.R.A.M. DE SILVA E/13/058 PROJECT : OPENMRS SEMESTER 06

LOG BOOK (CO328 : Software Engineering)



<u>OpenMRS Description</u>: OpenMRS is a patient-based medical record system focusing on giving providers a free customizable electronic medical record system (EMR).

• The mission of OpenMRS is to improve **healthcare delivery** in resource-constrained environments by coordinating a global community that creates a robust, scalable, user-driven, open source medical record system platform.

Milestone	Completed Date
Selected a project . (OpenMRS)	22/06/2017
Installed Maven and Git for windows and set configurations.	24/06/2017
Checked out source code in Github repository https://github.com/OpenMRS	28/06/2017
Building from source: Referred developer manual.(http://devmanual.openmrs.o rg/en/Technology/getSetUp.html) Installed MySql (https://dev.mysql.com/downloads/in staller/) Set proxy configurations in Git Bash. Cloned from github repository using Git Bash.	30/06/2017 - 2/07/2017

 Built the source using maven.[1] Build failure handling.[https://talk.openmrs.org/t/h ow-do-i-set-up-my-development-syst em/3437/15] [2] Build success.[3] Ran OpenMRS using jetty server.[4] 	
Joined the OpenMRS community and singed up up for OpenMRS talk.[5]	04/07/2017
Configuring the IDE (intellij) https://wiki.openmrs.org/display/docs/Developer+How-To+Setup+And+Use+IntelliJ	18/07/2017
Started working on add tests for junit TODO items in the code	

Openmrs . https://wiki.openmrs.org/display/docs/Pull+R equest+Tips	
Conveying Pull request details [15]	24/9/2017
Updating fork [16]	26/9/2017
Started working on a new bug Replace duplication in UserServiceImpl by StringUtils [17] TRUNK- 5047	27/9/2017
Assigned TRUNK-5047 to myself [18]	27/9/2017
Created a seperate branch "TRUNK -5047" for the issue in my repo. [19]	27/9/2017
Understanding the issue [20]	27/09/2017
Modifying the code [21]	27/09/2017
Testing (success)[22]	27/09/2017
Pushing to the newly created branch TRUNK-5047 [23]	27/09/2017
Pull request and compare [24]	
Pull request on TRUNK-5047 [25] pull request	27/09/2017
Conveying the issue owner about the PR [26]	27/09/2017
Merged pull request TRUNK-5047 by openMRS_link [27]	28/09/2017
TRUNK - 5212 status changed to ready for work.	17/10/2017

• Open Source code repository(fork to my github account) : https://github.com/RanganaDe/openmrs-core

1.Build source using maven

```
# mon clean install

[INVO] Scanning for projects...

[INVO] Scanning for projects...

[INVO] OpenMrS

[INVO] OpenMrS

[INVO] OpenMrS |

[
```

2.Build failure handling

[Error] plugin com.mycila:license-maven-plugin:2.6 0r one of its dependencies could not be resolved: Failed to read artifact descriptor for com.mycila:license-maven-plugin:jar:2.6:could not transfer artifact com.mycila:license-maven-plugin:pom:2.6 from/to openmrs-repo...

Solution: Manually created the settings.xml file in \${user.home}/.m2/ with required information.

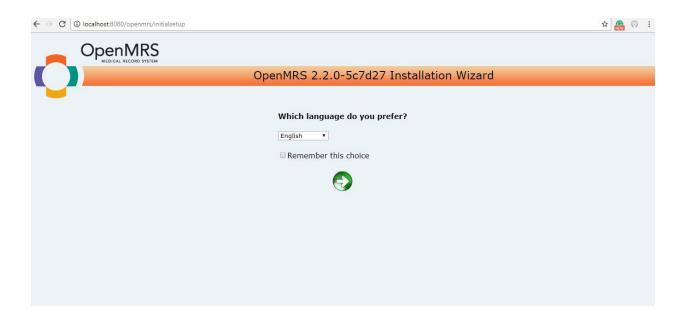
3.Build Success

4.Run OpenMRS using Jetty Server

```
Paraganala Nilkolds (d/openms-core/webapp (master)

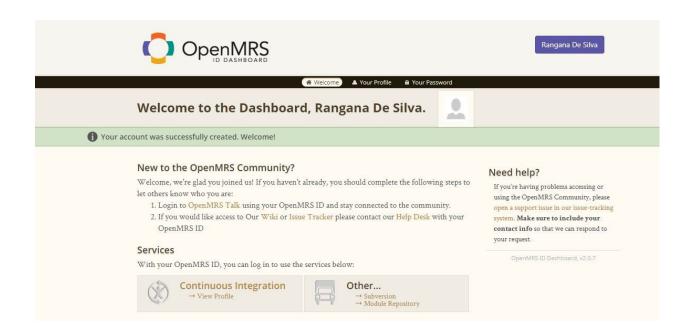
3 mon jetty:rum
for projects...

whom loading inter/maverepo.openms.org/neous/content/repositories/public/org/apache/maver/plugins/maven-assembly-plugin/2.2-beta-5/maven-assembly-plugin-2.2-beta-5, pom
bomn loaded: http://maverepo.openms.org/neous/content/repositories/public/org/apache/maver/plugins/maven-assembly-plugin-2.2-beta-5, pom
bomn loaded: http://maverepo.openms.org/neous/content/repositories/public/org/apache/maver/plugins/maven-assembly-plugin-2.2-beta-5, pom
bomn loaded: http://mavenepo.openms.org/neous/content/repositories/public/org/apache/maver/plugins/maven-assembly-plugin-2.2-beta-5, pom
bomn loaded: http://mavenepo.openms.org/neous/content/repositories/public/org/apache/maver/plugins/maven-assembly-plugin-2.2-beta-5, pom
bomn loaded: http://mavenepo.openms.org/neous/content/repositories/public/org/celipse/jetty/jetty-pomper-apache/maver-plugin-3.2-beta-5, pom
bomn loaded: http://mavenepo.openms.org/neous/content/repositories/public/org/celipse/jetty/jetty-pomper-apache/maver-plugin-3.2-beta-5, pom
bomn loaded: http://mavenepo.openms.org/neous/content/repositories/public/org/celipse/jetty/jetty-porject-9.3.2-vois0827.pom
bomn loaded: http://mavenepo.openms.org/neous/content/repositories/public/org/celipse/jetty/jetty-porject/9.3.2-vois0827.pom
bomn loaded: http://mavenepo.openms.org/neous/content/repositories/public/org/celipse/jetty/jetty-porject-9.3.2-vois0827.pom
bomn loaded: http://mavenepo.openms.org/neous/celipse/jetty/jetty-porject-9.3.2-vois082
```



5. Joined the community of OpenMRS







rangana Rangana De Silva

1m

I am an undergraduate at University of Peradeniya, currently enrolled in the computer engineering degree program. I have gained some skills working with JAVA and MySQL. This is my first attempt at contributing to an open source project and I hope to make it a successful one.

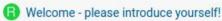












Hi, I am an undergraduate at University of Peradeniya, currently enrolled in the computer engineering degree program. I have gained some skills working with JAVA and MySQL. This is my first attempt at contributing to an open source project and I hope to make it a successful one.

Hello,

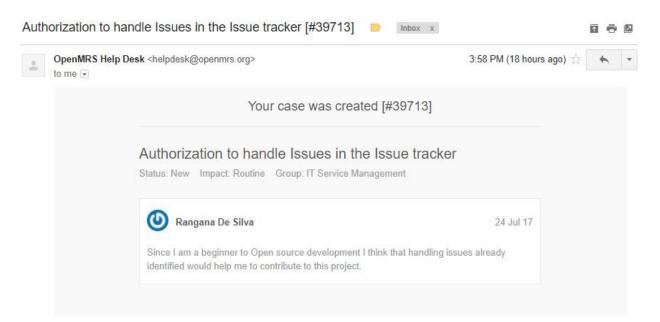
Welcome to the community that saves even more lives!

In what capacity would you prefer to contribute? Develop? Test? Document? Translate? Support? Or somethi else?

More details of these categories can be found at: http://openmrs.org/join-the-community/



6. Authorisation to handle issues with Jira





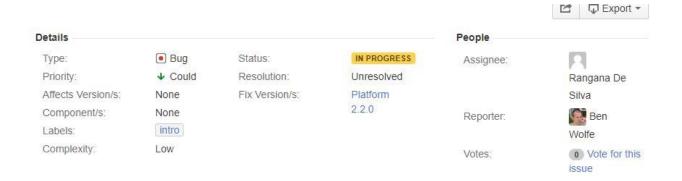
7. Claimed the Issue No: Trunk -248: Add tests for JUNIT TODOs

Description

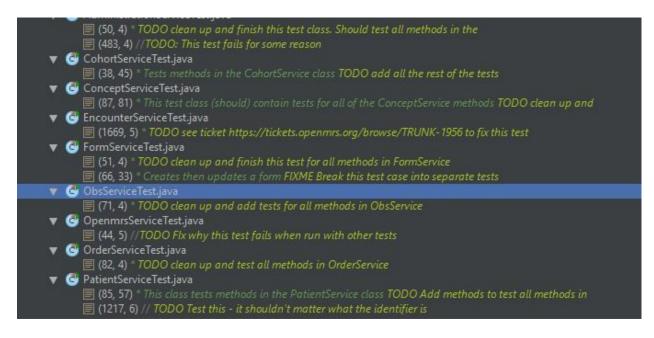
There are TODO comments spread throughout the code that contain the word 'junit'. These represent where devs have thought "hmm, this could benefit from a junit test", but didn't have time/energy to write it at that moment.

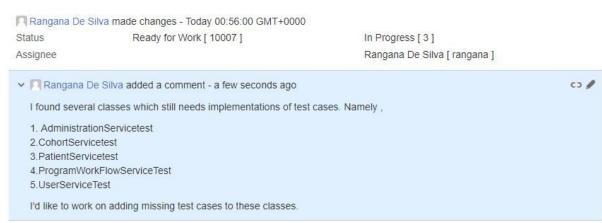
These tests need to actually be written, the TODOs removed.

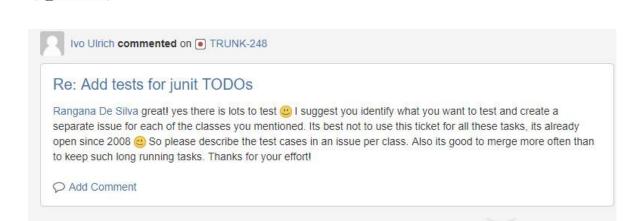
It might help to run code coverage locally to spot the untested line the TODO was for. Run mvn clean package && mvn jacoco:report report is then in api/target/site/jacoco/index.html.



8.Identified Classes which need test cases implemented.







9. Identified A test method in ProgramWorkFlowService.java which is not tested yet

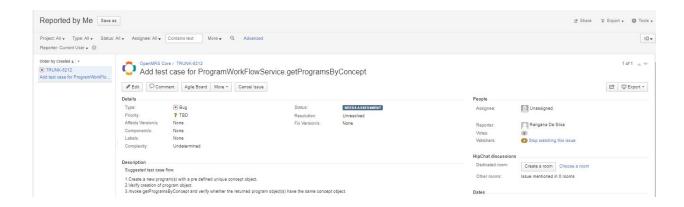
```
@Authorized( { PrivilegeConstants.GET_PATIENT_PROGRAMS })
public List<Program> getProgramsByConcept(Concept concept);

/**
    * Returns a list of ProgramWorkflows that are using a particular concept.
    *
    * @param concept - The Concept being used.
    * @return - A List of ProgramWorkflows
    */
```

```
@Override
@ GTransactional(readOnly = true)
public List<Program> getProgramsByConcept(Concept concept) {
    return dao.getProgramsByConcept(concept);
}
```

A test case has to be written in ProgramWorkFlowServiceTest.java to see whether this method returns the expected concept object or not.

10.Creation of a new Ticket to add tests to ProgramWorkFlowService.getProgramsByConcept method [Trunck 5212]



11. Contacted Ivo and mentioned about the creation of new ticket .

✓ No Ulrich added a comment - 2017-08-10 06:05:00 GMT+0000

dear Rangana De Silva have you had the chance to create a new ticket for a specific class you want to test? If so, please tell us so we can make it ready for you to work on and we can close this ticket. Thanks!

Rangana De Silva added a comment - 32 minutes ago

Dear Ivo.

https://issues.openmrs.org/browse/TRUNK-5212

I've identified one method which needs a test case in ProgameWorkFlowService and I've created the above issue for a start.

Please check whether the issue is reported as per standard so that I can start working on it. @

P:S Sorry for the delay in getting back to this since I was pre occupied with University Exams.

Thanks.

12. Working on the issue and making a pull request ()

- Made an issue to address the solution for the test method mentioned above.
- Fork the repository on which I am working, clone my forked repo to my local computer, and set up the upstream remote:

git clone git://github.com/RanganaDe/openmrs-core.git
git remote add upstream https://github.com/openmrs/openmrs-core.git

 Checked Out a new local branch based on the master and update it to the latest.
 The convention is to name the branch after the current ticket,in this case "TRUNK-5212"

git checkout -b TRUNK-5212 master git clean -df git pull --rebase upstream master Next step is to,

1. Push the branch to my fork. Treat it as a backup.

git push origin TRUNK-5212

2. Code [9/24/2017]

```
public void getProgramsByConceptTest() {
   List<Program> actualProgramList = new ArrayList<Program>();
   List<Program> expectedProgramList= new ArrayList<Program>();
   Program program1 = new Program();
   program1.setName("TEST PROGRAM1");
   program1.setDescription("TEST PROGRAM DESCRIPTION1");
   program1.setConcept(cs.getConcept(3));
   Program program2 = new Program();
   program2.setName("TEST PROGRAM2");
   program2.setDescription("TEST PROGRAM DESCRIPTION2");
   program2.setConcept(cs.getConcept(3));
   Program program3 = new Program();
   program3.setName("TEST PROGRAM3");
   program3.setDescription("TEST PROGRAM DESCRIPTION3");
   program3.setConcept(cs.getConcept(4));
   expectedProgramList.add(0,program1);
   expectedProgramList.add(1,program2);
   dao.saveProgram(program1);
   dao.saveProgram(program2);
   dao.saveProgram(program3);
   actualProgramList = dao.getProgramsByConcept(cs.getConcept(3));
    assertEquals(expectedProgramList.actualProgramList);
```

Wrote the test method for "getProgramsByConcept" and it was successful.

3. Commit

git commit -m "TRUNK-5212: add tests to ProgramWorkFlowService.getProgramsByConcept"

Issue a Pull Request

git pull --rebase upstream master git checkout master git pull --rebase upstream master git checkout TRUNK-5212 git rebase -i master

Then, make sure all unit tests still pass:

mvn clean package

And Push changes to the fork:

In order to make a pull request,

- Navigate to the OpenMRS repository https://github.com/RanganaDe/openmrs-core), Click "Pull Request".
- Write branch name in the branch field: TRUNK-5212
- Click "Update Commit Range".
- Ensure the changesets introduced are included in the "Commits" tab.
- Ensure that the "Files Changed" incorporate all of the changes.
- Fill in some details about the potential patch including a meaningful title : add tests to ProgramWorkFlowService.getProgramsByConcept.
- Click "Send pull request".
- In JIRA, open the issue and click the "Request Code Review" button to change the issue's status to "Code Review". Add a comment linking to the URL of the pull request.

13.Pull request steps carried out in git bash

```
wedding@A MINGw64 /e/MRS/openmrs-core (master)
$ git remote -v
origin https://github.com/openmrs/openmrs-core.git (fetch)
origin https://github.com/openmrs/openmrs-core.git (push)

wedding@A MINGw64 /e/MRS/openmrs-core (master)
$ git checkout -b TRUNK-5212
Switched to a new branch 'TRUNK-5212'

M api/src/main/java/org/openmrs/scheduler/Schedule.java
A api/src/test/java/org/openmrs/api/ProgramWorkflowServiceTest.java
```

```
wedding@A MINGw64 /e/MRS/openmrs-core (TRUNK-5212)
$ git add --all
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git status
On branch TRUNK-5212
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)
                   api/src/main/java/org/openmrs/scheduler/Schedule.java
        modified:
        modified:
                    api/src/test/java/org/openmrs/api/ProgramWorkflowServiceTest
 java
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git commit -m "TRUNK-5212: add tests to ProgramWorkFlowService.getProgramsByCo
ncept"
[TRUNK-5212 1c4ba0c7d] TRUNK-5212: add tests to ProgramWorkFlowService.getProgra
msByConcept
2 files changed, 44 insertions(+), 2 deletions(-)
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git status
On branch TRUNK-5212
nothing to commit, working tree clean
```

```
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git remote set-url origin https://github.com/RanganaDe/openmrs-core.git
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git remote -v
origin https://github.com/RanganaDe/openmrs-core.git (fetch)
origin https://github.com/RanganaDe/openmrs-core.git (push)
               https://github.com/openmrs/openmrs-core.git (fetch)
upstream
               https://github.com/openmrs/openmrs-core.git (push)
upstream
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git push origin TRUNK-5212
Counting objects: 16, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (12/12), done.
Writing objects: 100% (16/16), 3.37 KiB | 0 bytes/s, done.
Total 16 (delta 6), reused 0 (delta 0)
remote: Resolving deltas: 100% (6/6), completed with 6 local objects.
To https://github.com/RanganaDe/openmrs-core.git
   42b4339fa..1c4ba0c7d TRUNK-5212 -> TRUNK-5212
```

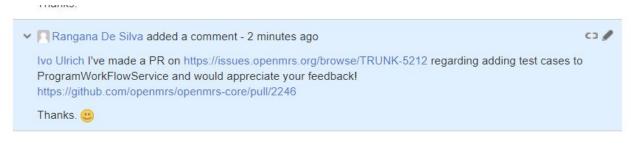
14.Pull request for one method in programWorkFlowService created

Pull request for TRUNK -5121 https://github.com/openmrs/openmrs-core/pull/2246

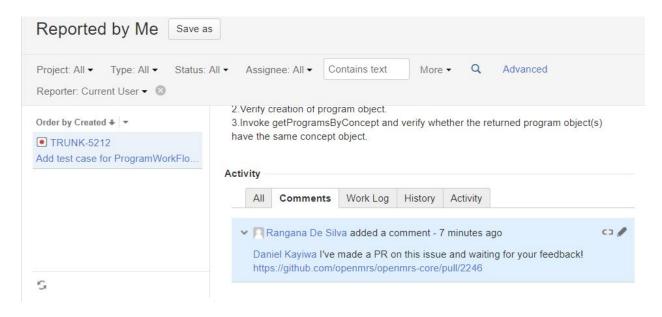


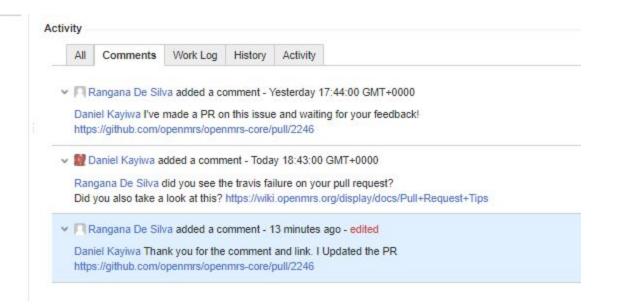
15. Conveying Pull request details.

On the previous issue from which I created a seperate issues targeting only a specific task.



On the issue I created,



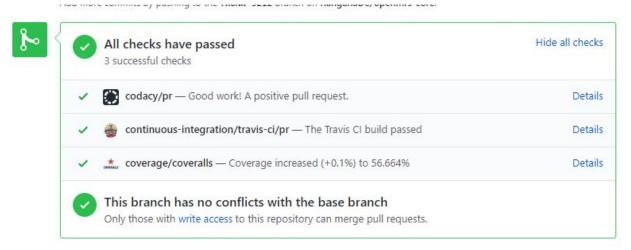


Each test is supposed to either 1) start with 'should' or 2) contain '_should'.

After correcting the naming convention and pushing to the same branch,

```
GW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git status
On branch TRUNK-5212
Changes not staged for commit:
(use "git add <file>..." to update what will be committed)
(use "git checkout -- <file>..." to discard changes in working directory)
no changes added to commit (use "git add" and/or "git commit -a")
 edding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git config --global http.proxy http://e13058:letitbegin@cachex.pdn.ac.lk:3128
 wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git config --global --get http.proxy
http://e13058:letitbegin@cachex.pdn.ac.lk:3128
 redding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git remote -v
origin https://github.com/RanganaDe/openmrs-core.git (fetch)
origin https://github.com/RanganaDe/openmrs-core.git (push)
                   https://github.com/openmrs/openmrs-core.git (fetch)
https://github.com/openmrs/openmrs-core.git (push)
upstream
upstream
 edding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git add --all
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git status
On branch TRUNK-5212
Changes to be committed:
(use "git reset HEAD <file>..." to unstage)
         modified: api/src/test/java/org/openmrs/api/ProgramWorkflowServiceTest
wedding@A MINGw64 /e/MRS/openmrs-core (TRUNK-5212)
$ git commit -m "TRUNK-5212: add tests to ProgramWorkFlowService.getProgramsByCo
[TRUNK-5212 a0e1bcdd1] TRUNK-5212: add tests to ProgramWorkFlowService.getProgra
msByConcept
 1 file changed, 1 insertion(+), 1 deletion(-)
```

```
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git push origin TRUNK-5212
Counting objects: 10, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (8/8), done.
Writing objects: 100% (10/10), 807 bytes | 0 bytes/s, done.
Total 10 (delta 4), reused 0 (delta 0)
remote: Resolving deltas: 100% (4/4), completed with 4 local objects.
To https://github.com/RanganaDe/openmrs-core.git
    b2c7e8691..a0e1bcdd1 TRUNK-5212 -> TRUNK-5212
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
```



Travis has a very nice feature to check for errors in the pull request. When a pull request is made it automatically runs a " mvn clean install " to see if it builds successfully.

Travis

https://travis-ci.org/openmrs/openmrs-core/builds/279452518?utm_source=github_status&utm_medium=notification

16.Updating fork

Git fetch --all

```
S git fetch --al
retching origin
remote: counting objects: 956, done.
remote: counting objects: 100% (46/46), done.
remote: total 956 (delta 379), reused 433 (delta 376), pack-reused 516
Receiving objects: 100% (456/956), 281.72 kts | 196.00 kts/s, done.
Resolving deltas: 100% (436/434), completed with 227 local objects.
 petching upstream
from https://github.com/openmrs/openmrs-core
                                                       /openmrs/
1.10.x
1.11.x
1.12.x
1.4.x
1.5.x
1.6.x
1.7.x
1.8.x
1.9.x
2.0.x
 * [new branch]
* [new branch]
                                                                                                              -> upstream/1.10.x
-> upstream/1.11.x
                                                                                                           ⇒ upstream/1.11.x

⇒ upstream/1.12.x

⇒ upstream/1.4.x

⇒ upstream/1.5.x

⇒ upstream/1.5.x

⇒ upstream/1.7.x

⇒ upstream/1.8.x

⇒ upstream/2.0.x

⇒ upstream/2.0.x

⇒ upstream/2.1.x
      [new branch]
      [new branch]
 * [new branch]
* [new branch]
     [new branch]
[new branch]
     [new branch]
[new branch]
                                                                                                             -> upstream/TRUNK-4487
-> upstream/TRUNK-5180
-> upstream/TRUNK-5211
                                                          TRUNK-4487
 * [new branch]
                                                         TRUNK-5150
                                                         ajax-dashboard -- upstream/ajax-dashboard -- upstream/ajax-dashboard -- upstream/approximate-datetime -- upstream/centralized-auditing -- upstream/centralized-auditing -- upstream/ccl-2014 -- upstream/ccl-2014 -- upstream/ccl-2014
     [new branch]
[new branch]
     [new branch]
[new branch]
                                                         gct-2015 -> upstream/gct-2015
global-property-types -> upstream/global-property-types
hlbernate-search -> upstream/filosernate-search
hl7-nkl -> upstream/hl7-nkl
      [new branch]
 * [new branch]
* [new branch]
                                                           improved-person-attribute-type -> upstream/improved-person-attribu
te-type
* [new branch]
* [new branch]
* [new branch]
                                                                                                                 -> upstream/master
                                                         metadata-localization -- upstream/metadata-localization

moduleadmin --> upstream/meduleadmin

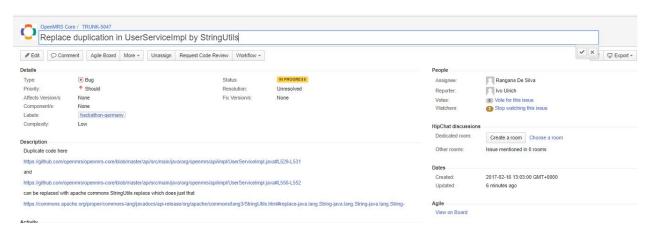
obs-codes-expanded -- upstream/obs-codes-expanded

order-entry

revert-1134-TRUNK-2585 -> upstream/order-entry

revert-1143-revert-1134-TRUNK-2585 -> upstream/revert-1143-revert-
     [new branch]
[new branch]
  * [new branch]
                                                         revert-1186-gc1-9 -> upstream/revert-1186-gc1-9
revert-1408-trunk-4522 -> upstream/revert-1408-trunk-4522
revert-1436-troup_branch -> upstream/revert-1436-troup_branch
revert-1616-1.11.x -> upstream/revert-1616-1.11.x
 * [new branch]
* [new branch]
     [new branch]
[new branch]
                                                         revert-1736-T#UNK-4813 -> Upstream/revert-1736-T#UNK-4813
revert-1753-revert-1750-T#UNK-50 -> Upstream/revert-1753-revert-17
       [new branch]
  * [new branch]
                                                          structured-numeric -> upstream/structured-numeric test -> upstream/test
      [new branch]
```

17. Started working on a new Bug TRUNK - 5047



18.Assigned to myself



19.Created a separate branch "TRUNK -5047" for the issue in my repo.

```
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5212)
$ git checkout -b TRUNK-5047
Switched to a new branch 'TRUNK-5047'

wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5047)
$ git status
On branch TRUNK-5047
nothing to commit, working tree clean

wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5047)
```

20. Understanding the Issue

Task is to replace duplication in UserServiceImpl by the use of StringUtils.

StringUtils handles null input Strings quietly. That is to say that a null input will return null. Where a boolean or int is being returned details vary by method. A side effect of the null handling is that a NullPointerException should be considered a bug in StringUtils. Methods in this class give sample code to explain their operation. The symbol * is used to indicate any input including null.

One method we can use for this particular task to replace duplications,

public static String replace(String text, String searchString, String replacement)

Replaces all occurrences of a String within another String. A null reference passed to this method is a no-op.

```
StringUtils.replace(null, *, *) = null
StringUtils.replace("", *, *) = ""
StringUtils.replace("any", null, *) = "any"
StringUtils.replace("any", *, null) = "any"
StringUtils.replace("any", "", *) = "any"
StringUtils.replace("aba", "a", null) = "aba"
StringUtils.replace("aba", "a", "") = "b"
StringUtils.replace("aba", "a", "z") = "zbz"
```

Parameters:

text - text to search and replace in, may be null searchString - the String to search for, may be null

replacement - the String to replace it with, may be null

Returns: the text with any replacements processed, null if null String input

In the implementation code they have used string.replace method as shown below,

```
@Override
@Transactional(readOnly = true)
public Integer getCountOfUsers(String name, List<Role> roles, boolean includeRetired) {
    if (name != null) {
        name = name.replace("","");
    }
}
```

- The String.replace() method you linked to takes two char values, so it only ever replaces one character with another (possibly multiple times, 'though).
- The StringUtils.replace() method on the other hand takes String values as the search string and replacement, so it can replace longer substrings.

Hence, this can be replace with StringUtils.replace as a solution to the above mentioned bug.

21. Modifying the Code

Modified code segments,

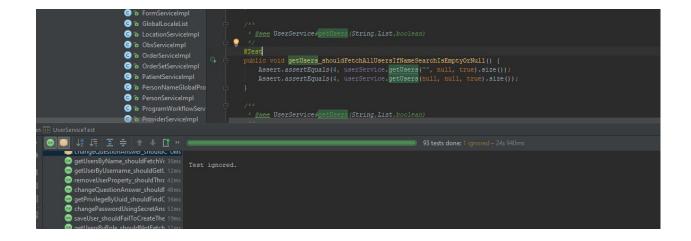
•

```
@Override
@Transactional(readOnly = true)
public Integer getCountOfUsers(String name, List<Role> roles, boolean includeRetired) {
   if (name != null) {
      name = StringUtils.replace(name,",","");
   }
```

ullet

22.Testing (success)

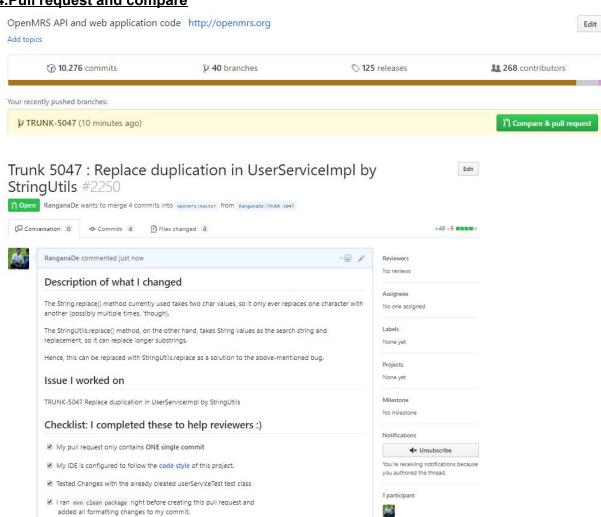
Ran userServiceTest.java after modifications and it was successful.



23. Pushing to the newly created branch TRUNK-5047

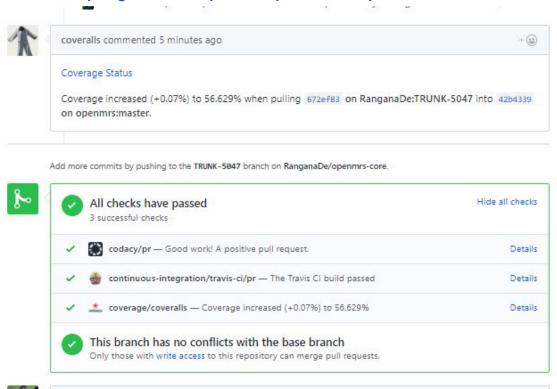
```
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5047)
$ git status
On branch TRUNK-5047
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)
no changes added to commit (use "git add" and/or "git commit -a")
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5047)
$ git add --all
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5047)
$ git status
On branch TRUNK-5047
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)
         modified: api/src/main/java/org/openmrs/api/impl/UserServiceImpl.java
wedding@A MINGw64 /e/MRS/openmrs-core (TRUNK-5047)
$ git remote -v
origin https://github.com/RanganaDe/openmrs-core.git (fetch)
origin https://github.com/RanganaDe/openmrs-core.git (push)
                  https://github.com/openmrs/openmrs-core.git (fetch)
                  https://github.com/openmrs/openmrs-core.git (push)
upstream
wedding@A MINGw64 /e/MRS/openmrs-core (TRUNK-5047)
$ git commit -m "TRUNK-5047 : Replace duplication in UserServiceImpl by StringUtils "
[TRUNK-5047 7ea904e32] TRUNK-5047 : Replace duplication in UserServiceImpl by StringUtils 1 file changed, 3 insertions(+), 2 deletions(-)
wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5047)
$ git push origin TRUNK-5047
Counting objects: 11, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (9/9), done.
Writing objects: 100% (11/11), 927 bytes | 0 bytes/s, done.
Total 11 (delta 5), reused 0 (delta 0)
remote: Resolving deltas: 100% (5/5), completed with 5 local objects.
To https://github.com/RanganaDe/openmrs-core.git
                             TRUNK-5047 -> TRUNK-5047
   [new branch]
 wedding@A MINGW64 /e/MRS/openmrs-core (TRUNK-5047)
```

24.Pull request and compare



25.Successful pull request

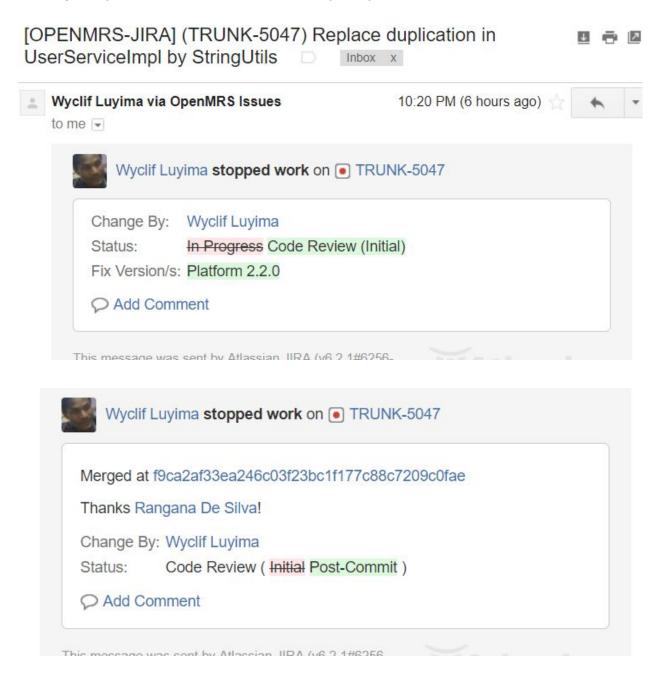
Changes made: https://github.com/openmrs/openmrs-core/pull/2251



26.Conveying the issue owner about the PR



27.Merged my pull request on TRUNK-5047 by Wluyima and the ticket was also closed.





Wyclif Luyima closed an issue as Fixed

OpenMRS Core / TRUNK-5047

Replace duplication in UserServiceImpl by

StringUtils

Change By: Wyclif Luyima

Status: Code Review (Post-Commit) Closed

Resolution: Fixed

Add Comment

Merge link TRUNK-5047

