BAHIR DAR INSTITUTE OF TECHNOLOGY

FACULITY OF COMPUTING

DEPARTMENT OF SOFTWARE ENGINEERING

SOFTWARE ENGINEERING TOOLS AND PRACTICES

COURSE CODE - SEng2052

GROUP ASSIGNMENT

Project Title: RESTITUTION PAYMENT AND REHABILITATION MANAGEMENT SYSTEM

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Scenario

Bahir Dar University wants to build a new campus in Zege and needs 40 hectares of land which is owned by the farmers that live in Zege. Since, it needs to relocate the landowners from there, it goes to Amhara Bureau of Rural Land Property Valuation, Rehabilitation and Project Preparation Director.

The workflow that gets done for Bahir Dar University to get the land and start its project of building its new campus includes:

- The company goes to Amhara Bureau of Rural Land Property Valuation, Rehabilitation and Project Preparation Director and requests land for its project.
- The bureau sends notice to landowners, project owner (in our case, BDU), and other stakeholders to discuss about the need of relocation of landowners. This is done 1 year prior to the start date of the campus' construction.
- If ¾ of the stakeholders attend the discussion, a decision will be made. If not, the discussions will be held for 2nd and 3rd time.
    - Landowners can't say no, since the bureau has the authority to take land from landowners if the land is needed for public use (i.e. infrastructures, market, etc.) according to directive 44/2013 5(1).
- After the landowners agree to relocate, the bureau sends experts to Zege with forms, and modern instruments to measure the land.
- Then every property that is found in the requested land including houses, crop type, and movable properties (like grinding mill) will be counted by experts from the bureau with a team of 5 – 7 observers (witnesses) from the landowners.
- Then, a notice will be sent to landowners to attend a meeting about the counted data. Every landowner must attend the meeting.
- The count will be presented to the landowners. If the count is correct, they will approve it. If they don't approve it, the count will be redone as well as the meeting.
- Once the count is approved, price estimators for the counted properties will estimate monetary value of each property according to directive 44/2013.
- Landowners will be notified to attend another meeting to approve the estimated prices for their properties.
- Once the estimated price is approved, the money will be transferred to landowners' bank account. The money is paid by Bahir Dar University.
- The landowners evacuate from their land within 30 days from the time they received a notice about request to their land.
- After they evacuated, Bahir Dar University can start construction for its new campus in Zege.
- The evacuees will be rehabilitated by receiving land in another location, expert advice from the government if they want to start a business according to directive 44/2013.

Therefore, Restitution Payment and Rehabilitation System includes all the steps starting from a project's request to land until landowners receive compensation for their properties, relocate to somewhere else, and rehabilitate.

Requirement from Stakeholders specified using story format:

- **Landowners**:
  - As a Landowner, I would like to view Address in order to enter my address.
  - As a Landowner, I would like to view RehabilitationWork in order to see the amount of budgetSupport I'm getting from the government.
  - As a Landowner, I would like to view CalculateTotalCompenstation in order to see how much money will be transferred to me.
  - As a Landowner, I would like to view PropertyCounting in order to check whether my property was counted correctly.
  - As a Landowner, I would like to view DisplayProject in order to see all information about the project.
  - As a Landowner, I would like to view CurrentPrice in order to see the current market price of crops, plants, building material, movable properties like grinding mill ("*wefcho*") and other properties.
  - As a Landowner, I would like to view DisplayProject in order to see all information about the project.
  - As a Landowner, I would like to view LandOwner in order to see all information about myself.
  - As a Landowner, I would like to view FamilyMembers in order to enter all information about my family.
  - As a Landowner, I would like to view InterestRequest in order to enter my preference of working alone or in a team during rehabilitation.

- **Project Manager**:
  - As a Project Manager, I would like to view landRequest, in order to add a request to Amhara Land Bureau to request a land for my project.
  - As a Project_Manager, I would like to view DisplayLandOwner in order to see all information about the landowners that reside in my soon to be project area.
  - As a Project Manager, I would like to view Land, in order to see all information about the land I'm requesting for including its status, type, and etc.
  - As a Project Manager, I would like to view CalcProplCompenstation, in order to see the amount of compensation that I'm going to transfer to landowners for their properties.
  - As a Project Manager, I would like to view CalculateTotalCompenstation, in order to see the amount of compensation that I'm going to transfer to landowners for their psychological troubles caused by their relocation.
  - As a Project Manager, I would like to view CalculateTotalCompenstation, in order to see the total amount of money that I'm going to transfer to landowners.
- **System Administrator**:
  - As a System Administrator, I would like to view Register, in order to remove a user from the database.

- As a System Administrator, I would like to view Register, in order to add a user to the database.
- As a System Administrator, I would like to view Register, in order to give privilege a user to the database.
- As a System Administrator, I would like to view Register, in order to deny a user a privilege to access the database.
- As a System Administrator, I would like to view Register, in order to update a user's login information.

- **Employee**:
  - As an employee, I would like to view makeNotification, in order to send notification to landowners about the discussion that's going to be held.
  - As an employee, I would like to view DisplayLandOwner in order to see all information about the landowners that reside in soon to be the project's area.
  - As an employee, I would like to view PropertyCounting, in order to enter the property of the landowners that I counted.
  - As an employee, I would like to view makeMinutedocument, in order to enter the record the date, type of , and decision made from the discussion.
  - As an employee, I would like to view CalculateTotalCompenstation, in order to calculate total restitution that's going to be paid to landowners by project manger.
  - As an employee, I would like to view RehabilitationWork, in order to assign land owners to a new rehabilitating occupation.
  - As an employee, I would like to view CheckPayment, in order to check whether the restitution is paid to the landowners.
  - As an employee, I would like to view PrioritizeBasedOn, in order to give priority to people that are old, with disability in the rehabilitation process.
  - As an employee, I would like to view InterestRequest, in order to ask landowners if they prefer to work in teams, or in private during rehabilitation.

Integrating our project to GitHub using gitbash

1. **Configuring Git**

2. **Creating a Git repository**

```
Netsanet@LAPTOP-LHNAL2RV MINGW64 ~
$ mkdir LandManagement

Netsanet@LAPTOP-LHNAL2RV MINGW64 ~
$ cd LandManagement

Netsanet@LAPTOP-LHNAL2RV MINGW64 ~/LandManagement
$ git init
Initialized empty Git repository in C:/Users/Netsanet/LandManagement/.git/

Netsanet@LAPTOP-LHNAL2RV MINGW64 ~/LandManagement (master)
$
```

3. **Adding files to our Git repository**

```
Netsanet@LAPTOP-LHNAL2RV MINGW64 ~/LandManagement (master)
$ git add *
```

4. **Finding out what's happening:** To find out whether there are any files that are not being tracked by Git or whether there are files that are being tracked that haven't been committed:

```
Netsanet@LAPTOP-LHNAL2RV MINGW64 ~/LandManagement (master)
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   landmanagement/Address.java
        new file:   landmanagement/BuildingMaterial.java
        new file:   landmanagement/Crop.java
        new file:   landmanagement/Employee.java
        new file:   landmanagement/House.java
        new file:   landmanagement/Land.java
        new file:   landmanagement/LandOwner.java
        new file:   landmanagement/Menu.java
        new file:   landmanagement/Person.java
        new file:   landmanagement/Plant.java
        new file:   landmanagement/Project.java
        new file:   landmanagement/Request.java
```

5. **Making changes and tracking them**

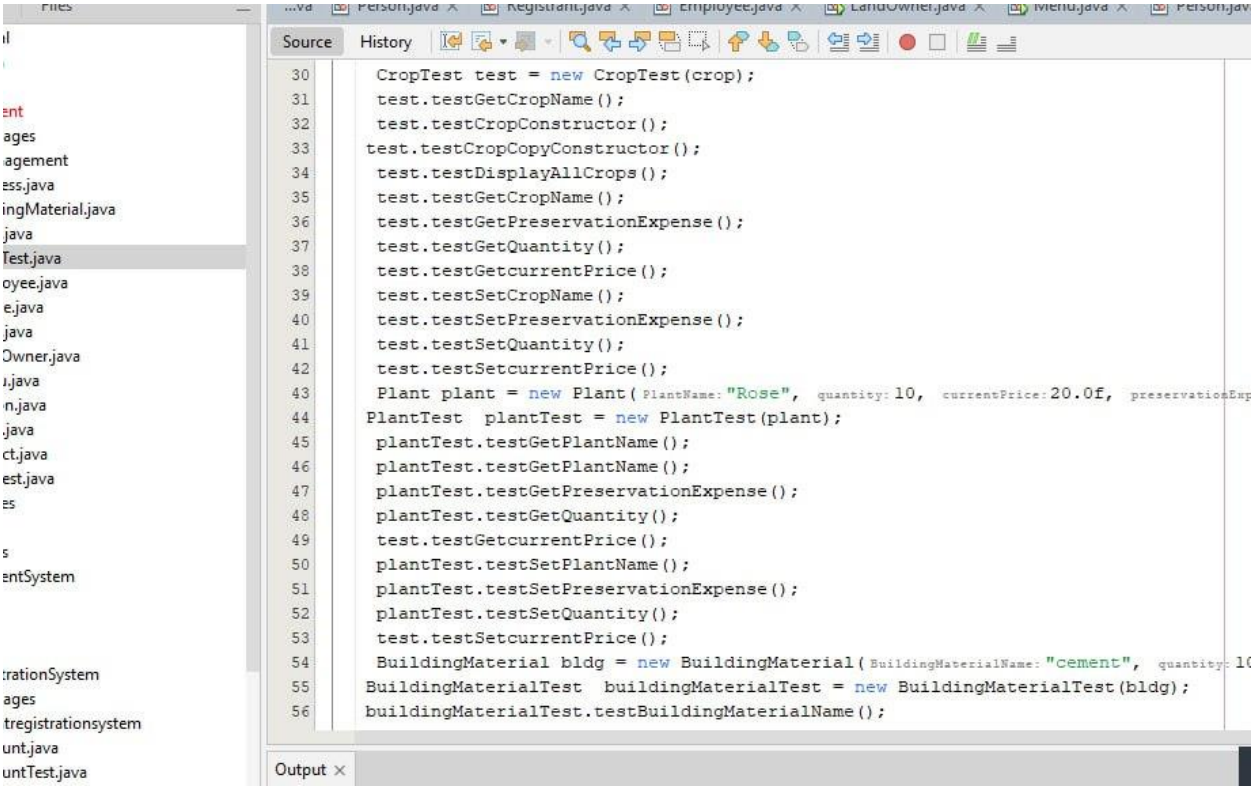
```
Netsanet@LAPTOP-LHNAL2RV MINGW64 ~/LandManagement (master)
$ git commit -a -m "The first Commit"
[master (root-commit) 12e4c81] The first Commit
 12 files changed, 1514 insertions(+)
 create mode 100644 landmanagement/Address.java
 create mode 100644 landmanagement/BuildingMaterial.java
 create mode 100644 landmanagement/Crop.java
 create mode 100644 landmanagement/Employee.java
 create mode 100644 landmanagement/House.java
 create mode 100644 landmanagement/Land.java
 create mode 100644 landmanagement/LandOwner.java
 create mode 100644 landmanagement/Menu.java
 create mode 100644 landmanagement/Person.java
 create mode 100644 landmanagement/Plant.java
 create mode 100644 landmanagement/Project.java
 create mode 100644 landmanagement/Request.java
```

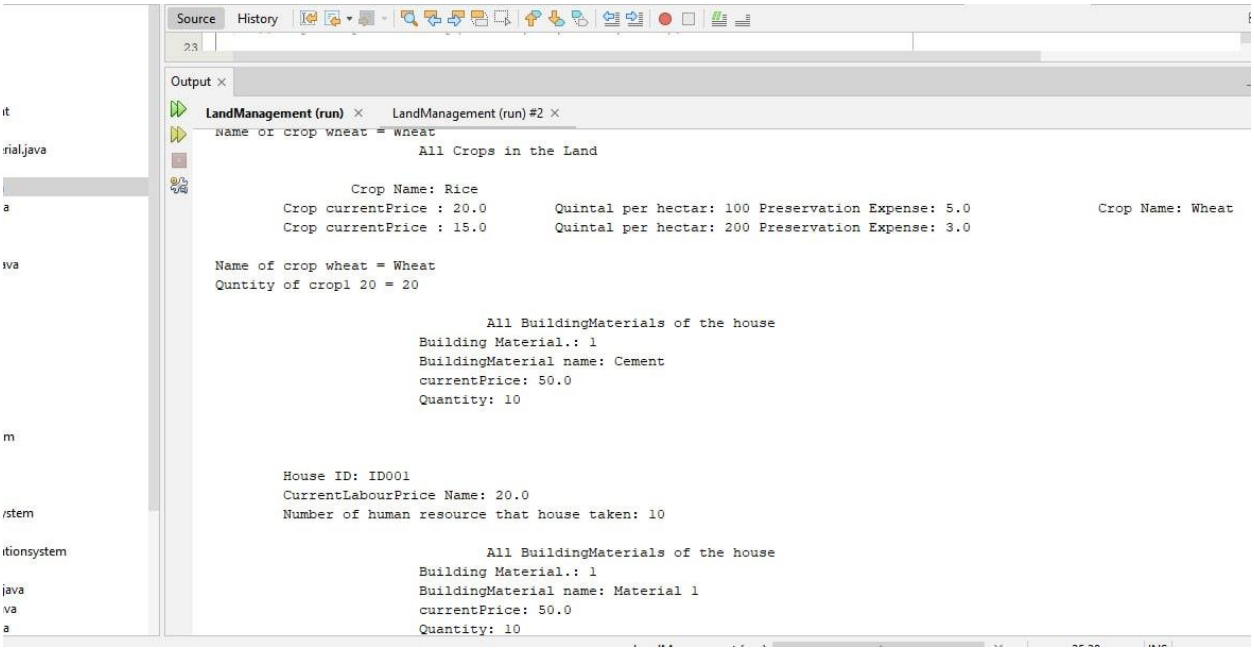
6. **Synchronizing your local Git repository with GitHub**

```
Netsanet@LAPTOP-LHNAL2RV MINGW64 ~/LandManagement (master)
$ git remote add orig https://github.com/NetsanetAlemu/LandManagementSystem.git

Netsanet@LAPTOP-LHNAL2RV MINGW64 ~/LandManagement (master)
$ git push -u orig master
Enumerating objects: 15, done.
Counting objects: 100% (15/15), done.
Delta compression using up to 8 threads
Compressing objects: 100% (14/14), done.
Writing objects: 100% (15/15), 11.17 KiB | 5.58 MiB/s, done.
Total 15 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), done.
To https://github.com/NetsanetAlemu/LandManagementSystem.git
 * [new branch]      master -> master
branch 'master' set up to track 'orig/master'.

Netsanet@LAPTOP-LHNAL2RV MINGW64 ~/LandManagement (master)
$
```

Unit testing using Junit

Unit testing refers to the practice of testing a function, a class of our code, so as to ensure that they work as expected.




Source
History
Output
LandManagement (run)
LandManagement (run) #2
Name of crop wheat = Wheat
All Crops in the Land
Crop Name: Rice
Crop currentPrice : 20.0 Quintal per hectar: 100 Preservation Expense: 5.0
Crop Name: Wheat
Crop currentPrice : 15.0 Quintal per hectar: 200 Preservation Expense: 3.0
Name of crop wheat = Wheat
Quntity of crop1 20 = 20
All BuildingMaterials of the house
Building Material.: 1
BuildingMaterial name: Cement
currentPrice: 50.0
Quantity: 10
House ID: ID001
CurrentLabourPrice Name: 20.0
Number of human resource that house taken: 10
All BuildingMaterials of the house
Building Material.: 1
BuildingMaterial name: Material 1
currentPrice: 50.0
Quantity: 10

References:

- Junit tutorial for unit testing – The Ultimate Guide by Konstantina Dimtsa
- https://www.tutorialspoint.com/ant/index.htm