DSAL

Company Project Simulator CA2 Assignment

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P190

What has been achieved

Manage Role Form

1. Able to Save and Load Binary file
2. Able to Insert Role
3. Able to Update Role
4. Able to Delete Role
5. Able to set Project Leader Boolean
6. Input handling when Inserting or Updating

Here is a more details of what I have done in this form

Graphical user interface, application

Description automatically generated

When Role Form loads, we will be able to see ROOT ready, and we can begin adding roles.

Adding a new role under ROOT

Graphical user interface, application

Description automatically generated

Graphical user interface, application, Teams

Description automatically generated

Successfully added. Now I will update role

Graphical user interface, application, Word

Description automatically generatedGraphical user interface, application, Teams

Description automatically generated

Successfully edited. I will fast forward and load a saved Tree structure

Graphical user interface, text, application, Word

Description automatically generated

Note that Project Leader role has the checkbox “Project Leader role?” checked in the Selected Role Node Information section.

Expand All will fully expand the current tree structure.

Collapse will fully compact the current tree structure.

Save will override current tree structure into the binary file.

Reset will remove every Tree nodes, leaving only the ROOT

When the “Project Leader role?” checkbox is checked, the children of this Project Leader will not be able to have anymore child nodes. The menu option to add will not be clickable.

Graphical user interface, text, application, Word

Description automatically generated

Problems faced with Manage Roles form.

When I first watched the assignment requirements videos, I was at a lost of words as there were just so many complicated things to do. However, with the help of the headstart project, I was able to understand tree structure fast and thus able to perform operations that were taught before, such as Add and Edit a tree. I was also confused how to link this role data to the employee and project data. But I set this confusion aside and continued working on this form.

Another problem would be the Project Leader checkbox. I was not sure how to tell the application to stop allowing Project Leader’s children to have anymore children. I thought I had to read more about tree structures. But it turns out all I have to do was a simple if statement to check selected nodes parents having the Project Leader checked or not

Graphical user interface, text, application, email

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What has been achieved

Manage Employee Form

1. Able to Save and Load Binary file
2. Able to Insert Employee
3. Able to Update Employee
4. Able to Delete Employee
5. Able to Swap Employee
6. Able to Insert Dummy Employee and Swap with another Employee
7. Able to Create and Remove a secondary role for an employee without breaking tree structure’s data integrity
8. Unable to delete an employee if he has a Project assigned
9. Unable to delete an employee if he has children/ subordinates
10. Input handling has been done
11. A project leader type role should not be set to a non-project type leader role when the role is already being used by employee data to create a team structure
12. Advance swap support. Can swap with another employee regardless of the level of the employee inside the tree structure

Here is a more details of what I have done in this form

When form loads

Graphical user interface, application

Description automatically generated

Selected node information are correct

Graphical user interface, application

Description automatically generated

Items menu with submenu

Graphical user interface, table

Description automatically generated

Able to add employee

Graphical user interface, application

Description automatically generated

Able to edit employee

Graphical user interface, text, application

Description automatically generated

Able to display all roles and choose it

Graphical user interface, text, application

Description automatically generated

Able to correctly show Reporting Officer. When I changed Jordan’s role to Project Manager, he will report to a Manager. There are 3 Managers he can report to.

Graphical user interface, application, Word

Description automatically generated

Able to Swap role with anyone except Root, and retains the salary

Observe Member 5 and Jordan’s salary and role

Graphical user interface, application, Word

Description automatically generated

After clicking swap, observe the swapped role. Jordan is now a Backend Developer and keeps his salary(S$1000)

Text

Description automatically generated

Unable to remove an employee if he has a project assigned. Graphical user interface, text, application, Word

Description automatically generated

We will get this alert because Jordan has been assigned to “Project A”

I have created a Dummy data and will swap Jordan with Dummy. Graphical user interface, application

Description automatically generated

After clicking swap, Jordan will be a Project Manager, with no child or projects assigned. Text

Description automatically generated

We can now remove Jordan from the tree structure.

Graphical user interface, text, application

Description automatically generated

Jordan was under Wayne, now he has disappeared.

Problems faced with Manage Employee form.

I did not know save the Employee Form. I thought of saving Employee data into a new binary file but thought ahead and realised this will cause problems in the long run. I analysed the Role Save to file codes. I was getting problems such as different tree data, cannot load onto current form. Then it took a while before I finally understood well enough and be able to save both Role and Employee tree structure data into the same binary file.

To do Swap employee, I found out that we were unable to load the Employee tree structure into the Swap Form due to the tree structure rules and policy. To overcome this, I followed the recommendations which was to clone.

I also took some time to figure out after clicking swap, why the tree view was not showing changes, but changes only show when I open up the Swap Form again. I thought it was because of clone and that I was in the wrong track. It turns out that I had caused confusion among “Name” and “Text”.

For Change Role/Reporting Officer form, it was also challenging as I had to load all the possible roles into the combo box. Instead of loading out every single role from the Role data, I only loaded roles that exist in the current Employee tree structure. Because if I try to add a role that haven’t exist yet, example, Data Surveyor, I will not know how application behaves. As Data Surveyor will need to report to a parent role. And instead of using List, I used Hashed Set to get only unique roles and reporting officer names.

What has been achieved

Manage Project Form

1. Able to Save and Load
2. Proper management of form’s view mode, add mode and edit mode
3. Insert a new project to a team
4. Update an existing project and re-assign to another team
5. Delete an existing project and unassign the project from a team
6. Revenue specified is more than the total salary of all the employees in a team, and will highlight eligible team leaders
7. Project cannot be assigned to a team which already has a project assigned

Here is a more details of what I have done in this form

Graphical user interface, application

Description automatically generated

I already have 2 Projects created. The Mode will start as View.

When I want change the Mode to Add, I want to assign Project C

Graphical user interface, application

Description automatically generated

Only these 2 are highlighted as the specified revenue is more than or equal to the total salary of employees in a team. Timothy will not be highlighted because he already has Project A assigned to him.

Now I change the mode to Edit. Then I can interact with the Project List

Graphical user interface, text, application

Description automatically generated

I will change some values for Project C

When no leader is eligible I get an alert:

Graphical user interface, application

Description automatically generated

When I reduce the revenue to $70000, only Ester will be highlighted, no more John as his total salary is not eligible for this new revenue

Graphical user interface, text, application

Description automatically generated

I am able to see the updated Project Name and Revenue in the Project List

Table

Description automatically generated

I will go back to Edit Mode and select Project C2, then click Delete

Graphical user interface, application

Description automatically generated

Project C2 is now deleted from the list of Projects. I will save this Projects Data by clicking Save

Graphical user interface, application

Description automatically generated

Back to Employee Form’s tree structure.

I can see that Timothy has been assigned Project A

Graphical user interface, text, application

Description automatically generated

Similarly for his children/subordinates.

Graphical user interface, text, application

Description automatically generated

Additionally, for Robert’s team, he is assigned Project B

Graphical user interface, application

Description automatically generated

Lastly, since Timothy and Robert report to Jeff, Jeff will oversee these 2 projects

Graphical user interface, application

Description automatically generated

Problems faced with Manage Project form.

I took a while to think about how to store Project data. Instead of using a class, I created a dictionary, a list of dictionaries which stores Projects data.

I created methods and recursive codes which can extract out a list of Project Leaders and their salary, followed by taking their children and their parents as well as their grandparent nodes. Now that I have the necessary data, it is easier to proceed with a clearer picture in mind.