Assignment T1

Team IceBerg
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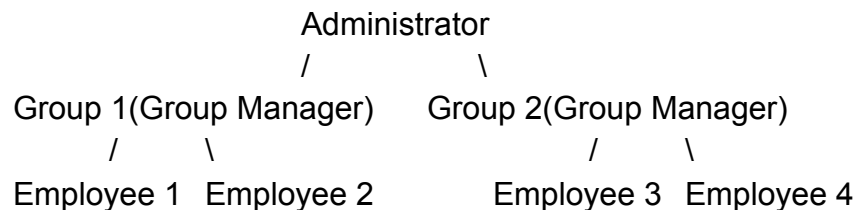Weijie Huang (wh2447)

Part 1:

1. What will your project do?

The application value of the budget reimbursement system is reflected in three functional parts: the budget function; the reimbursement function; the analysis function.

The administrator(e.g. CEO of the company) can create groups. Each group can create an account for each employee. Employees can use this account to apply for financial reimbursement. The group manager can review and approve employee claims. In addition, the administrator can view the financial status of the reimbursement data over a period of time.

2. Who or what will be its users?

The target user can be Normal Employee; Group Manager; Administrator(CEO);

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                        Administrator
                        /           \
        Group 1(Group Manager)     Group 2(Group Manager)
            /       \                   /       \
    Employee 1  Employee 2        Employee 3  Employee 4
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About authentication: we will provide a signup and login button in the home page.
Sign up: A person can just sign up a normal user account.

The Group Manager account and the Administrator account can only be created by the previous administrator, and cannot be created by using the signup function.

3. What do you think you'll be able to show in your demo?

We will display a web page, and then show that the administrator creates the managers of each group. Before the demo, we will prepare several data in the system to visualize the result better. We will also show the employee submits the reimbursement certificate,

the manager reviews the reimbursement certificate, and the administrator checks the company's reimbursement data.

4. About database

We will store every user's information, including name, roles, id, account name and password. Also, for every user, we will store their reimbursements, including submitted date, amount of money, description and request status. For every group, we will store group id, group name and members' id.

5. About using external APIs:

- **Calendar**
  - https://calendarific.com/
  - When a user creates a reimbursement application, the system will auto check the date of that event and mark it with corresponding labels.

Part 2:

1. Employee

a). As an employee, I want to apply for reimbursement so that I can upload invoices to submit an expense account.
My conditions of satisfaction are:
    Users can fill reimbursement forms and upload invoices to the financial department to examine.

b). As an employee, I want to check reimbursement status so that I can keep track of the reimbursement process and manage my expenses.
My conditions of satisfaction are:
    i. Users can check the status of each reimbursement.
    ii. Users can revise or supplement their reimbursement information.
    iii. Users can check how much reimbursement amount they can still use for the current month.

c). As an employee, I want to revoke my request so that I can make some changes if I typed in wrong information.
My conditions of satisfaction are：
    i. I can revoke my processing requests, then the status of that request will be changed to "CANCELLED".

2. Group Manager

    a). As a group manager, I want to examine and approve all reimbursement applications submitted by employees so that I can manage all reimbursements through the system.
My conditions of satisfaction are:

        i. Group managers can examine and approve reimbursement applications submitted by employees.

        ii. Group manager can change the status reimbursement applications to PROCESSING, MISSING INFO, DENIED, APPROVED.

        iii. Group manager can revise the reimbursement limits for next month.

    b). As a group manager, I want to check my group members' reimbursement history so that I am able to know my group's budget.
My conditions of satisfaction are:

        i. On the group page, I can click a member's name and see all his history reimbursement information.

        ii.On the group page, I can see all visualized statics charts of the group's budget.

3. Administrator

  a. As an administrator, I want to manage the reimbursement groups accounts so that I can give them the right to the group manager to manage their group member's reimbursement.
My satisfaction conditions are:

    I.   Administrator can create, edit or delete the accounts

    II.   Administrators can create many groups depending on setting different group numbers.

  b. As an administrator, I want to have the report of the reimbursement statistics of each group so that I can understand the allocation and use of the company's funds.
My satisfaction conditions are:

    I.   Administrators can see the reimbursement statistics of each group.

    II.   The application displays various statistical visualization images for administrators.

Part 3:

Normal User/Employee:

Acceptance test:
1. Given an employee, he is able to post reimbursement requests. When he clicks "Request for reimbursement", then fills in the forms of usage, amount, date and upload the invoice. Then he can post a request.
2. Given an employee, he is able to check the status of his past requests through his own page. The status may include "PROCESSING", "CANCELLED", "DENIED", "MISSING INFO" and "APPROVED".
3. As an employee, he is able to cancel his past requests by himself. But the request won't disappear in the system. Its status will be changed to "Cancelled".
4. **(Special case)** Given an employee, when he wants to create or edit some accounts, the system should fail his action.

Group manager:

Acceptance test:
1. Given a group manager, he or she is able to check the reimbursement requests of the whole team. The requests include text submission and image of invoice evidence. Then he or she is able to directly reject, approve, or request more necessary information.
2. Given a group manager, when a normal user opens a request case, he or she is able to change the state of the case including processing the request, case resolved.
3. Given a group manager, when he or she wants to check the team budget or reimbursement summary, the system allows him or her to check the status and analysis of the summary.
4. **(Special case)** Given a group manager, when he wants to create an administrator account, the system will send an error and fail his action.

Administrator:

Acceptance test:
1. Given an administrator of the application, when he wants to create the reimbursement groups for each company, then the application will provide him with a form to fill in some information about the groups and accounts and creates the groups for the administrator.

2. Given an administrator of the application, when he wants to see the statistical charts of his company in the system, then it will show him the reimbursement statistics of each group in his company.
3. **(Robustness)** Given an administrator, when he or she is trying to create groups/accounts and the website/network fails, the system is able to resume to the latest state.
4. **(Special case)** Given an administrator, when he wants to edit the existing group's ID number, then the system will send an error and fail his option because the group's ID number cannot be changed once it has been created.

Part 4:

JDK: Jdk1.8
IDE: IntelliJ IDEA
Package manager: Maven 3.6.1
Code style: IDEA Google CheckStyle
JUnit: JUnit 5
Code coverage: EMMA for IntelliJ
Bug finder: SpotBugs for IntelliJ
Database: SQLite / mysql 8.0.17