ITEC5920F - Topics Digital Media

Term project

Carleton Employee Management System

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Problem Statement

Employees are valuable asset in organisation. Therefore, managing the employees is most crucial task. This system will keep of records of employee and designation. The software consists of menu which will display all available options like employee management which will include adding, modifying, deleting and displaying the employee data. Additionally, the system will keep a track of employees' leaves.

Problem Analysis

The software works for employee and employer, which in this case in admin and gives them different level of access and functionalities. The functionalities can be broken into tasks. Below are the broken tasks for each user i.e. Admin and Employee.

Admin Tasks

1. Check attendance
2. Send messages to employees
3. Approve or reject leaves of employee
4. Display information of particular employee
5. Delete record of employee
6. Secure login

Employee's Task

1. Apply leaves

2. Mark attendance

3. Registration

4. Secure login

5. Display user information

6. Change account's password

Specifications

Carleton Employee Management System: provides a management software solution to users to manage employee's data and makes life easier. The software runs fulfill the requirements mentioned above. The software provides: -

1. Secure login: For admin the *username is **admin** and password is **admin***. The employee can create its own username and password.

2. Registration: Only employee has to register. The employee inputs various details such username, full name, email id, SIN number, mobile number, designation, password and address. The software has various validation for each field.

   A. The username has to be unique/ not registered earlier.

   B. The phone number has to be 10 digits. Software can accept spaces and **-** in phone number and remove them to make a valid phone number.

   C. The software check for valid and unique email address and if it is invalid, the software sends error message. If the email is valid and user is successfully registered, then it sends email to employee via Carleton EMS.

D. Software gives option to choose employee designation. To limit the functionality, only three designations are defined i.e. Junior Developer, Developer and Manager.

E. Software also validates the password i.e. it should have at least 7 characters with one lower, one upper and one special character or number.

3. Employee login screen has following options: -

   A. Mark attendance: it's just a button which marks employees' presence for that particular day.

   B. Change password: gives option to employee to change its current password. The software asks for previous password for authentication. Software also asks for new password which needs to be typed twice for validation. The software performs same checks on new password before finalising it.

   C. Display information: The button when pressed, display the current employee details. It's for employee to ensure that data maintained and correct and valid.

   D. Leave request: Software also gives user the option to apply for leaves. The system takes from and to date in yyyy-mm-dd format. The system also asks for reason for the leave.

   E. Admin messages: The system also displays the announcements/messages sent by admin. This is by-default on feature.

   F. Logout: When presses this button, the system logs the employee out of the screen.

4. Admin login screen greets the admin and gives following options: -

   A. Upload attendance: this feature allows admin to check all the number of employees who are present/come to work, on that particular day. The system can only pull the employee's attendance only when he/she has marked the attendance using their login.

B. Send Message: this feature sends notification/announcement to all employees. The system asks for message and send button transmits the message.

C. Delete Employee: system gives rights to admin to delete a record of an employee. The system asks for username and performs delete if records exists. If employee username doesn't exist, then it throws error message.

D. Display Info: This feature shows information of any particular employee. The system asks employee username and fetches his/her information. It sends error message in case of wrong username provided.

E. Check Leave Requests: This feature allows user to check for all leave requests and to accept or reject them based on user's choice. The system can only show requests if employee has applied for leave request.

F. Logout: This features logs admin out of the system.

DESIGN

The software solution is designed keeping *modularity* in mind. The software is segregated in parts/classes based on the functionality. The software development is based on *agile methodology* i.e. adding a new feature in every sprint. The software uses **SQLite3** database for data storage functions. The GUI is derived from **Tkinter** library which is widely used and intuitive to use. The system has many functionalities and hence it is difficult to put pseudo code of all functionalities. Pseudo code for "Registration" functionality is shown below:-

Pseudo code: *Registration*

registration_page (){

```
get_values(designation, username, email, phone, SIN, password);

validate_values(username, phone, email, SIN, password);

If (True){

        write_entry(register, login_details);

}

else{

        display_error();

}

exit();

}
```
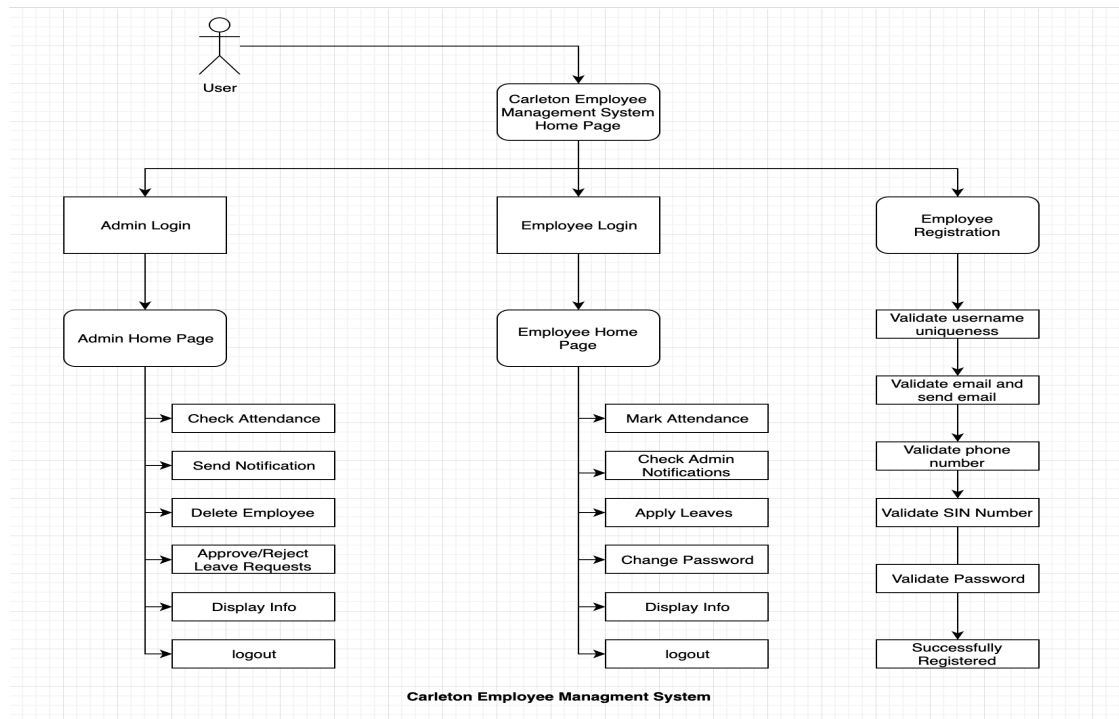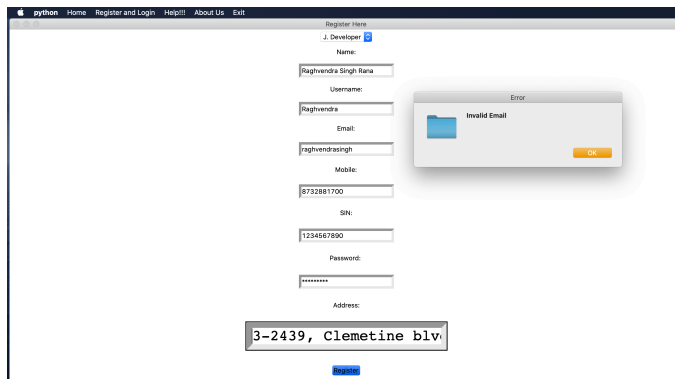
Flow Chart: *Carleton Employee Management System*

Carleton Employee Managment System

Testing

System has many functionalities and to document each one of them is not quite possible. Just like pseudo code, lets take registration functionality and test for some positive and negative test cases.

Case 1: Enter invalid registration data. Putting invalid email address.

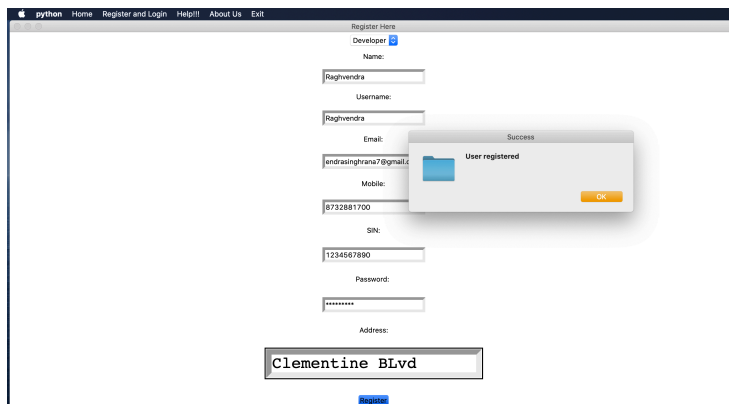**Expected output**: System should throw error

Actual output: System threw error
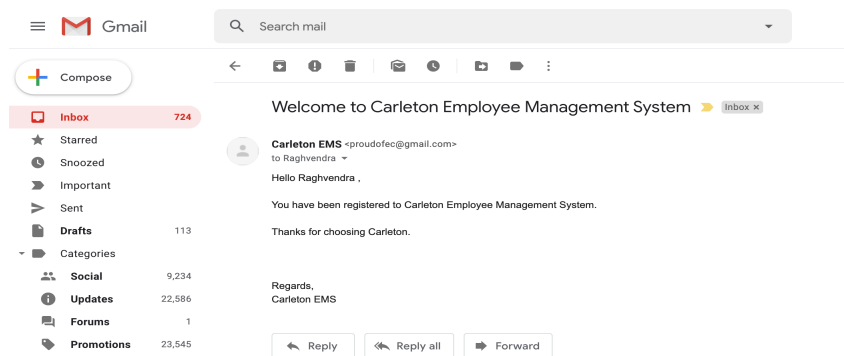
Result: Test case passed

Case 2: Enter valid entries

Expected output: System will allow user to register and send email to address.

Success message from system

System sent email to registered email address.

Actual output: System registered user, sent success message and email to user.

Result: Test case passed

Impact

The software thus designed helps user to manage his/her resources and track their presence. It also allows user to send notification and apply leaves. The software provides a low-cost management tool to user. Thus, software solves problem statement and makes life of the user a little easier.

References

Below mentioned websites are used while developing this solution.

https://likegeeks.com/python-gui-examples-tkinter-tutorial/

https://www.youtube.com/watch?v=VMP1oQOxfM0

https://www.w3schools.com/

https://www.kaggle.com/

https://www.youtube.com/watch?v=_lSNIrR1nZU