

CS1890 Assessed Coursework 4 Appraisal System

Introduction

Document Description

The purpose of this document is to detail the software design of the proposed system for CodeGroovers' Employee Performance Appraisal software application. To decide on how to interpret the given analysis we met to decide on how we will implement certain features to ensure that the final solution will meet all the project requirements. Once we had compared various solutions we split the system into separate systems; each responsible with handling different input and user role in the organisation. To outline this solution, we have produced four formal diagrams that fully outline how this system should be built as well as four semi-formal diagrams to enable the user to quickly grasp the details behind our design.

System Description

The system we have designed allows for users to access appraisals and create reviews using an intuitive web-based interface. All users access the system through the same login page. This provides appropriate authentication for the system and ensures that all users visit the correct respective user portals. Once the user has completed the login process and has provided valid credentials. The user ID is found in the organisations employee database where the user's department is found. Using this information, the user is automatically redirected to one of four system.

The system currently contains four individual portals (the Appraisee Portal, the Appraiser Portal, the HR Department Review Portal and HR Manager Review Portal).

Only HR department users can access the HR Department Review Portal and HR managers have exclusive access to the HR Manager Review Portal.

Any other (non-HR) employee can either be an 'Appraisee,' 'Appraiser,' or 'Reviewer'. If the other employee is currently undergoing appraisal, access is restricted to the 'Appraisee Portal' (where the user may only access the final version of the review once it has been reviewed by the reviewer and HR employees) and to view and create yearly goals. If the user has been assigned an appraisal of another staff member, after successful authentication they will be redirected to the Appraiser Portal. This portal allows the appraiser to view the appraises yearly goals and submit a draft appraisal to the reviewer after an observation session. The final responsibility an employee can assume is 'Reviewer'. If the employee has been assigned an appraisal to review they will be redirected to the 'Review Portal' after a successful login. The review portal is the first stage of the review process that finishes with the final reviews and approval from the HR department. The reviewer ensures that the review appropriately appraises the employee.

An appraisal is defined by an employee's yearly goals. The appraisal is a comment on whether the user has met these goals and, if not, where the user can improve to meet these goals for the next review. All employees involved in this system are alerted if there is a review pending or if a new review is added to the appraisal.

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Identification and Description of Stakeholders

Appraisee (Employee)

The appraisee is an employee of the organisation that has implemented the appraisal system. Each employee is responsible for producing a set of goals which act as a criterion for the employee to be reviewed by. These goals may be edited later and are made available for reviewer by other employees reviewing the appraisal.

User Requirements

- Should be able to set goals with managers at the beginning of each year.
- Comment on tasks and goals at the end of the year
- Needs to be able to see previous goals at the start of each year.
- Should be notified on appraisal status changes.

Appraiser (Employee)

The appraiser is the employee who oversees writing another employee's appraisal. At the start of the year, they will work with the appraisee to help them determine a set of goals they should work towards, and they are responsible for writing out the appraisal itself near the end of each year.

User Requirements

- Needs to be able to view and edit the appraisal they are working on.
- Needs to be able to view an employee's past goals to help them work on setting new ones.
- Requires notification of changes made by the appraisee to the appraisal.
- Requires notification of comments made by the appraisee on the appraisal.
- Requires notification of pending deadlines for incomplete appraisal forms.

Reviewer (Employee)

The responsibility of the reviewer is to ensure that the appraisal produced by the appraiser appropriately addresses each of the goals given by the employee. Typically, the reviewer is the line manager for the appraised employee.

User Requirements

- Needs to be able to comment on the performance of employees
- Needs to be able to see previous goals at the start of each year
- Requires notifications to notify for pending appraisal reviews forms

HR Department Reviewer

When a Reviewer (Employee) completes an employee's appraisal, a HR department reviewer will be notified of it. It is their job to then review the completed appraisal and if everything looks correct, sign off on the document to finalise it.

User Requirements

- Needs to be able to view complete appraisals.
- Needs to be able to finalise an appraisal.

- Requires notification of completed appraisals which need their attention.
- Requires notification of comments on completed appraisals.

HR Department Manager

The HR Department Manager oversees the entire appraisal process. They will be able to see the progress of all employee appraisals, with information such as when it was most recently edited, how long is left until an appraisal's deadline, etc. They will also be able to export and print completed appraisals.

User Requirements

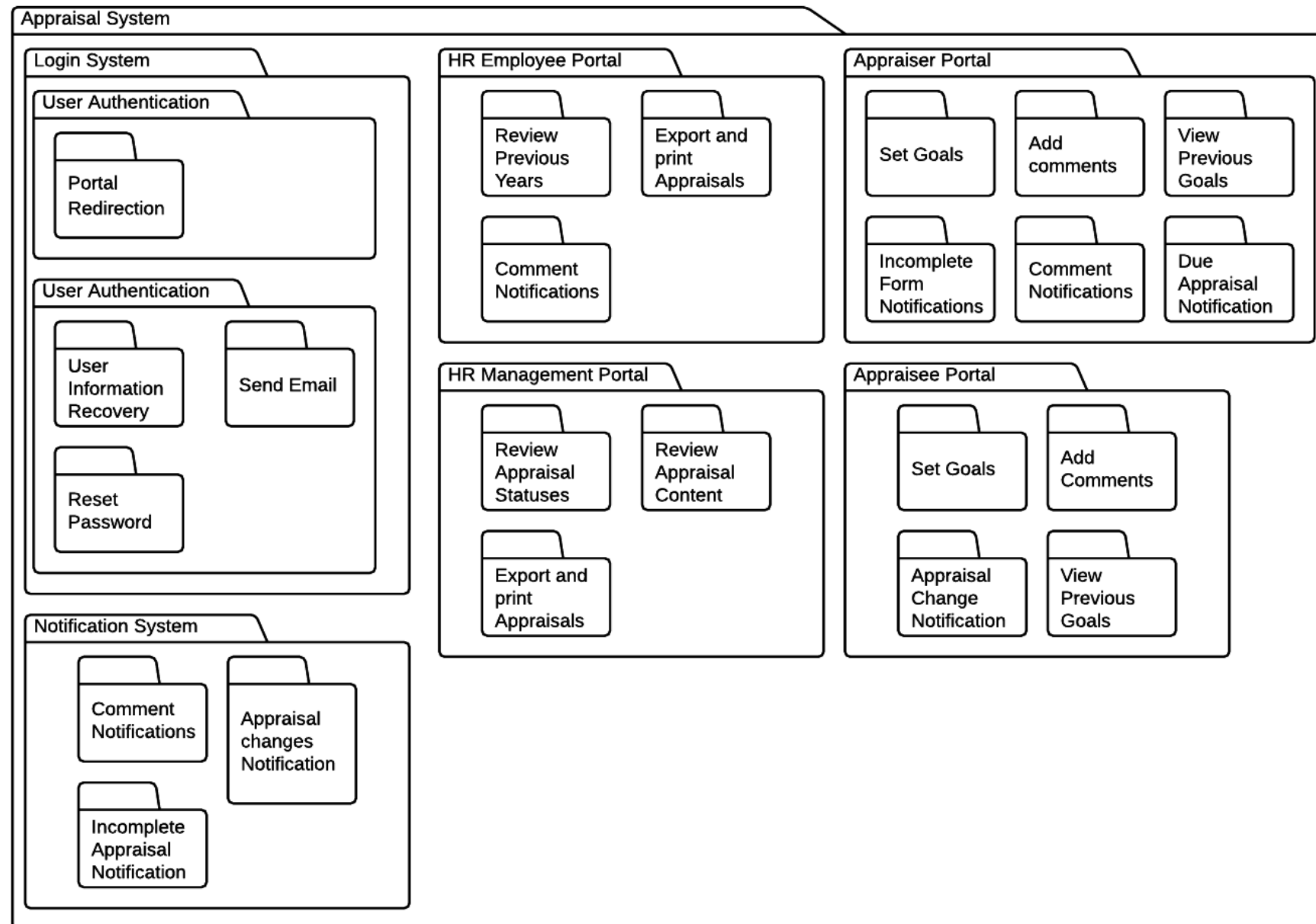
- Needs to be able to view the status of all appraisals.
- Needs to be able to export and print complete appraisals.

Decomposition View

A decomposition view of the potential software aims to break down the program into small, programmable units. It doesn't focus on the way the software processes and handles data, but rather details the functionalities assigned to each module. Representing the program in such a way also allows us to clearly see the hierarchy of module.

For the appraisal system, each of the portals are split up to represent different levels of access between each user, for example a standard HR employee will be able to view appraisals set by their assigned appraisers, but a HR manager will also be able to see the statuses of all the incoming appraisals.

Each portal utilises notifications, mainly to see when appraisals are due and the modifications made to each one, however it is the notification system which generates them based on pre-set conditions, and each portal shows the user the notifications specific to their account.

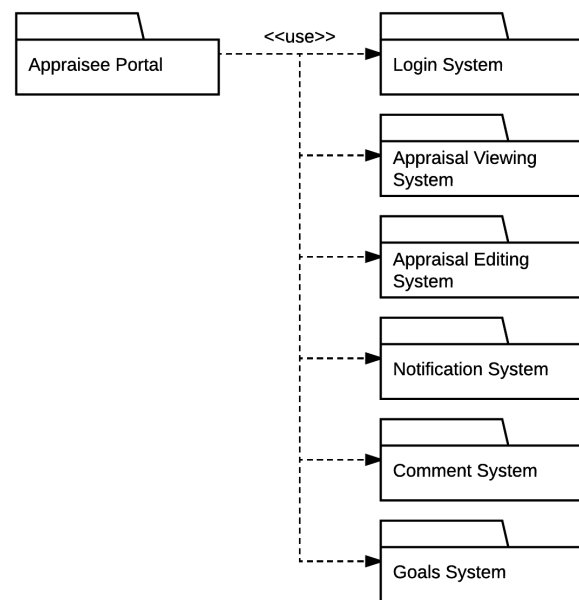


Dependency View

A dependency view of a piece of software is used to show how the programmable units of the software interact with one another. This is useful for analysing how changes made to one component may influence others.

The four user portals are shown in dependency views; Appraiser, Appraisee, HR Department Employees, and HR Department Manager. The diagrams indicate which pieces of the appraisal system's software they rely on, which essentially shows the functionality offered by each portal. All of them use the login system, appraisal viewing system and the notification system, as everyone requires the ability to log in with their unique username, view either their own or someone else's appraisal, and be notified of certain changes when they occur.

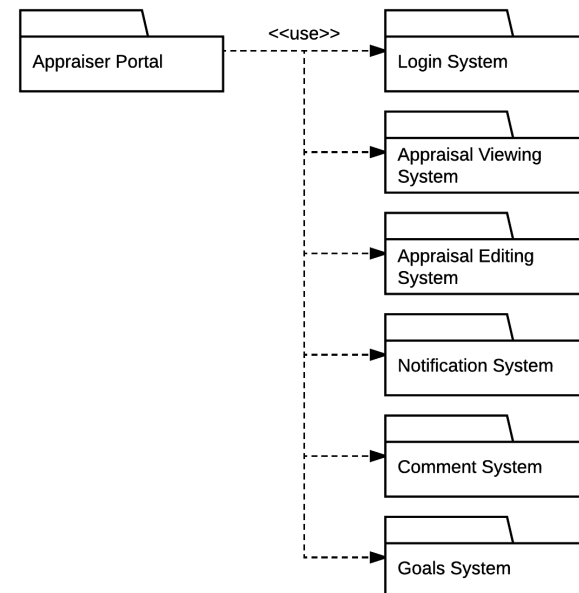
Appraisee Portal



The appraisee portal also makes use of the editing system, as whoever is being appraised needs to be able to complete any parts of the appraisal which they are required to fill out. Using the comments system allows an employee to add comments to their appraisal

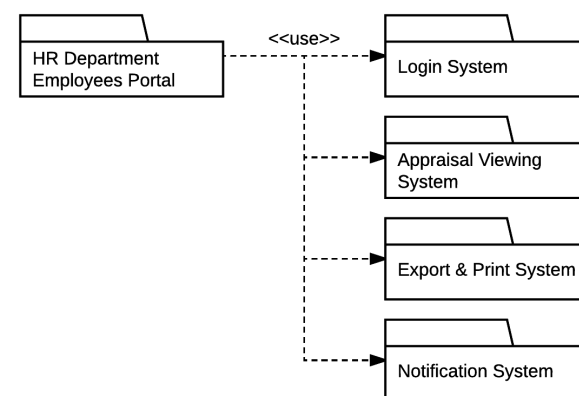
for viewing by their appraiser, and the using the goals system allows the user to view their previous goals and add new ones.

Appraiser Portal



The appraiser portal also has access to mostly the same functions as the appraisee portal so they can collaborate to complete the appraisal, though they will also be able to submit the appraisal once it has been finished.

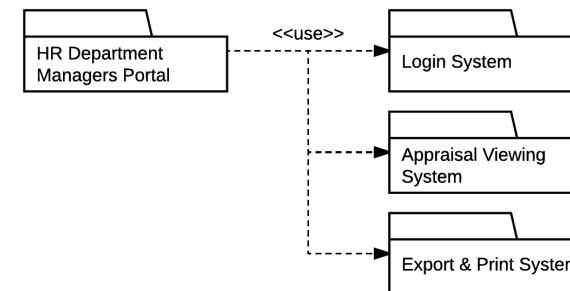
HR Department Employees Portal



The HR department employee portal can view completed appraisals once they have been submitted by the appraiser. They can then

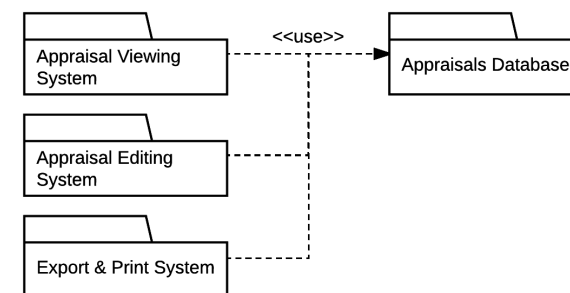
export and print the appraisal once they are satisfied with the quality of it.

HR Department Managers Portal



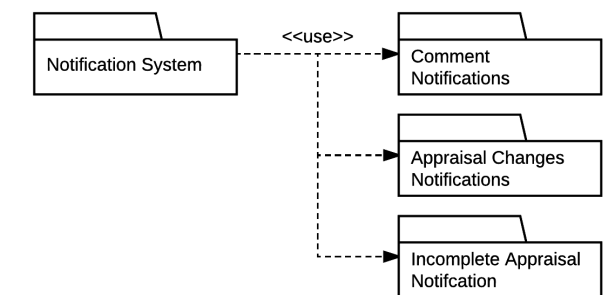
The HR department manager portal can also allow the user to view completed appraisals, as well as information about how many have been completed. This portal can also export and print appraisals.

Appraisals Database Dependency



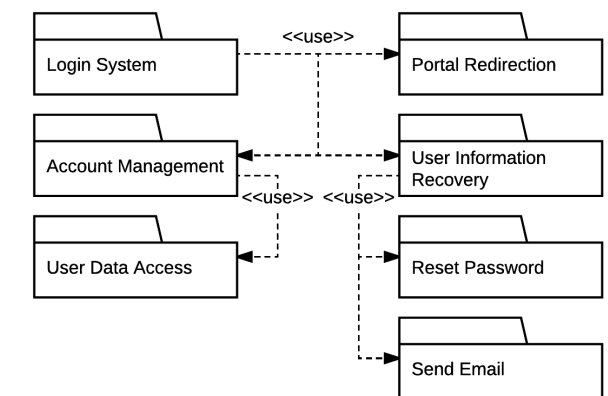
This diagram indicates which pieces of software rely directly on the appraisals database, which can be useful when considering adding or removing features from the database system. The viewing system and export system only need to be able to read certain entries in the database, but the editing system needs to be able to amend entries with the edits made.

Notification System



The notification system is also displayed, and it is worth noting that though all four user portals use the system, they may not use all the functionality it provides. The HR department manager, for example, does not need notifications about comments made on an in-progress appraisal.

Login System



The login system is also broken down into its dependencies due to being relatively complex. The login system relies on the user information recovery system, which in turn relies on being able to reset a user's password and send them a recovery email. A successful login then relies on account management functions, which access user data.

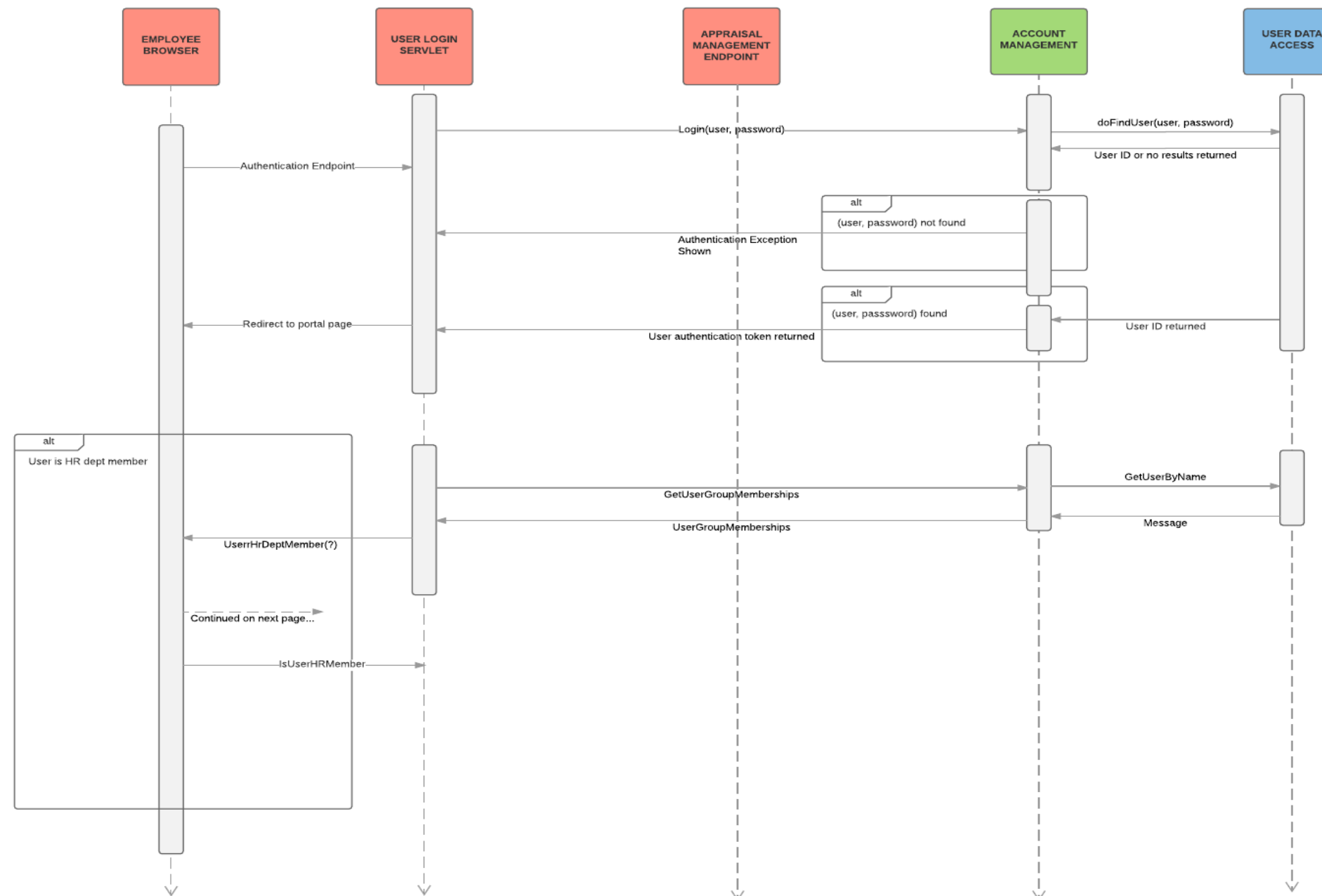
Execution (Sequence) View

The execution view shows describe the individual modules of the project. As this diagram is part of the UML specification It typically contains references to objects instead and OOP related entities. However, this diagram is a representation of the entire system and instead of representing the transfer of objects between methods, the diagram presents the transfer of messages, exceptions and other non-OOP related items. This diagram also contains 'frame' elements, such as *alt* and *each*. These elements represent a set of calls that should be made repeatedly on a list of objects or if a precondition is met.

As with all the diagrams in this diagram, four unique diagrams have been included in this document to present the processing in each of the four portals. A description

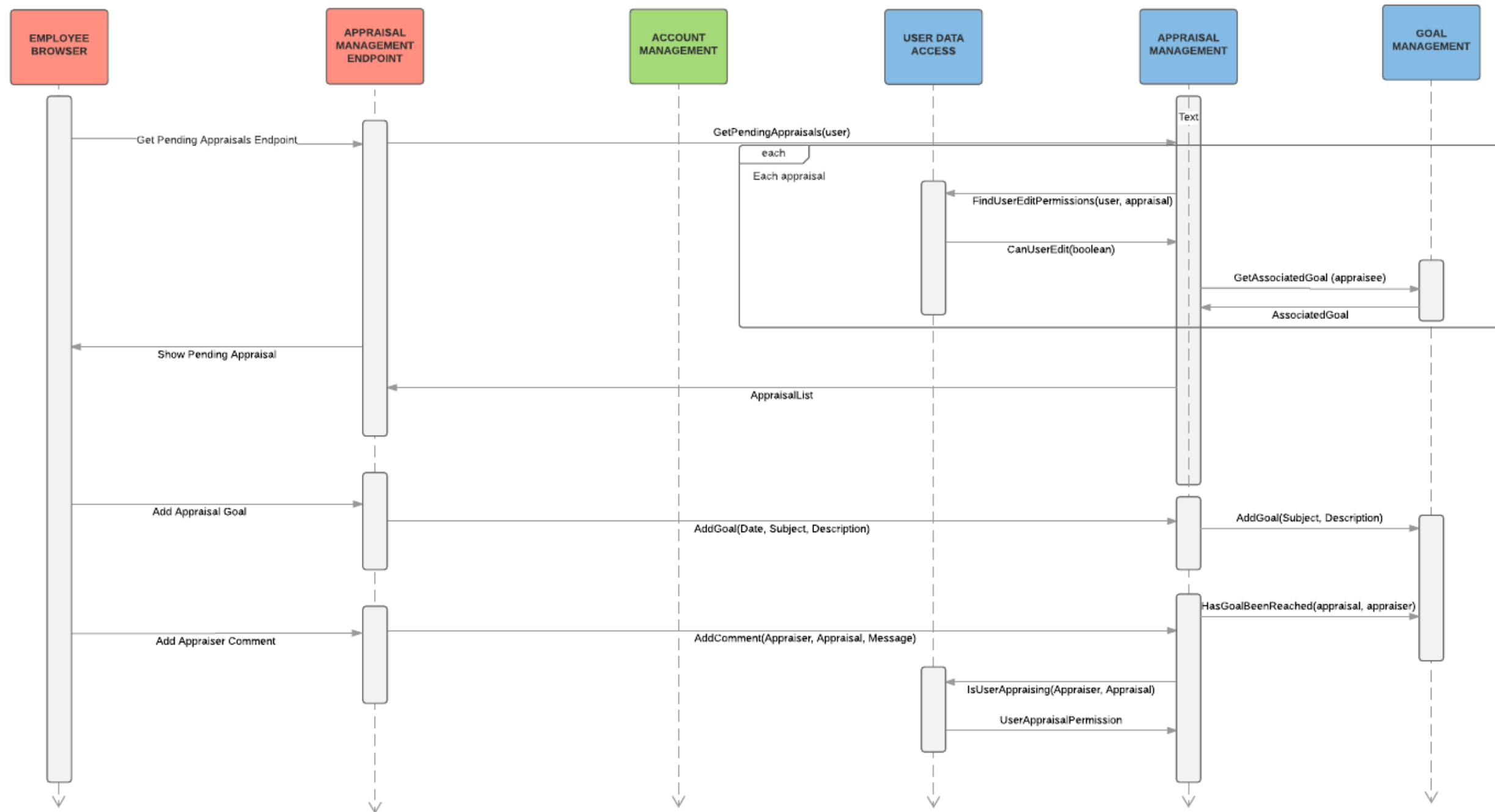
Employee Authentication View

This diagram outlines an abstract authentication procedure along with exception handling for incorrect authentication details. Once the user is successfully authenticated, the user account is checked to identify whether the user is part of the HR department. In this scenario, further user interactions are described in the view on page 10.



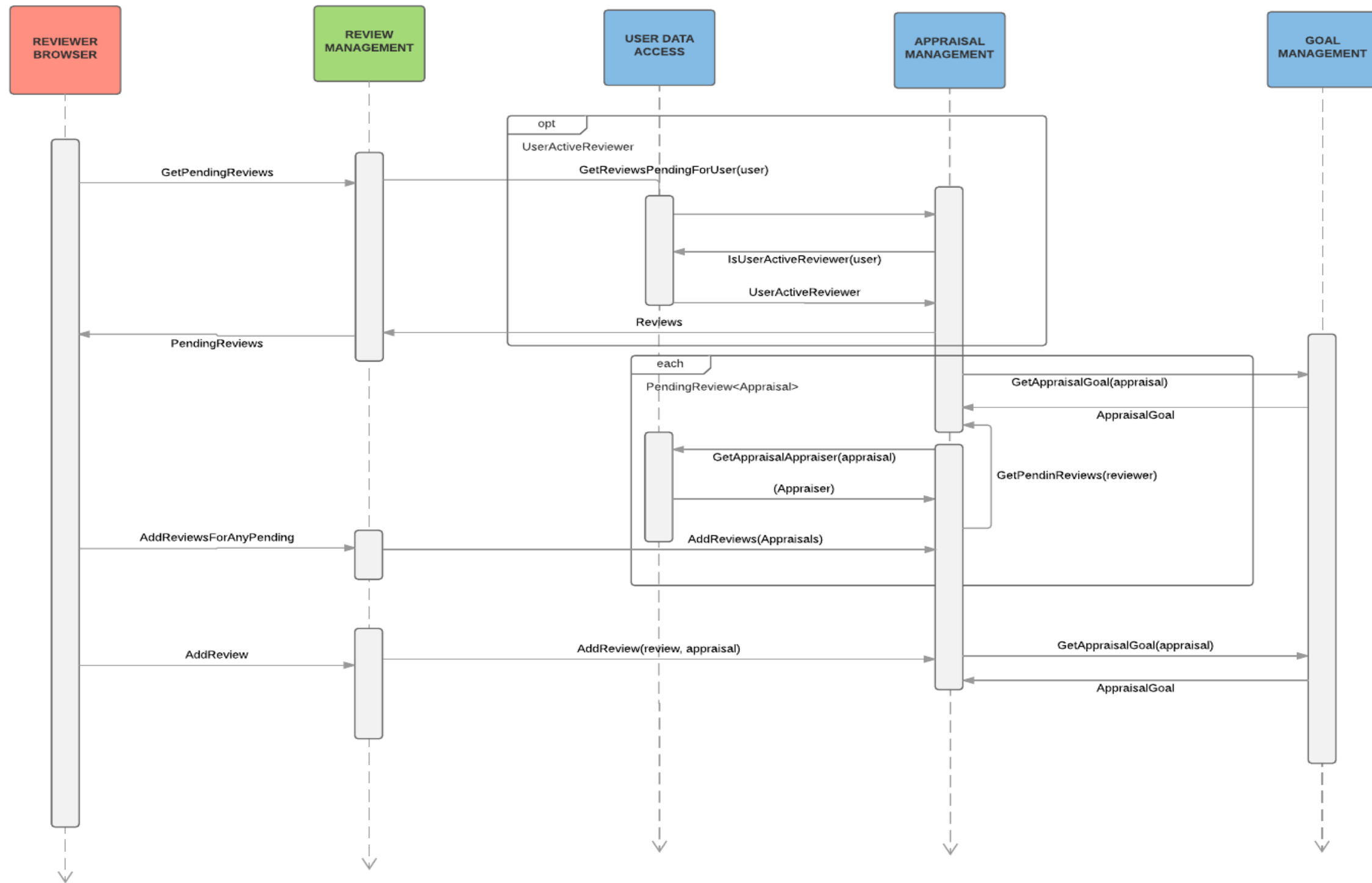
Employee Appraisal View

If the user accesses the appraisal view, the first interaction the user can make is to list the pending appraisals. If the appraisal item has a goal, the associated goal is added to the list item. If the user has edit rights (i.e. they are an appraiser or reviewer), this information is also added to the appraisal.



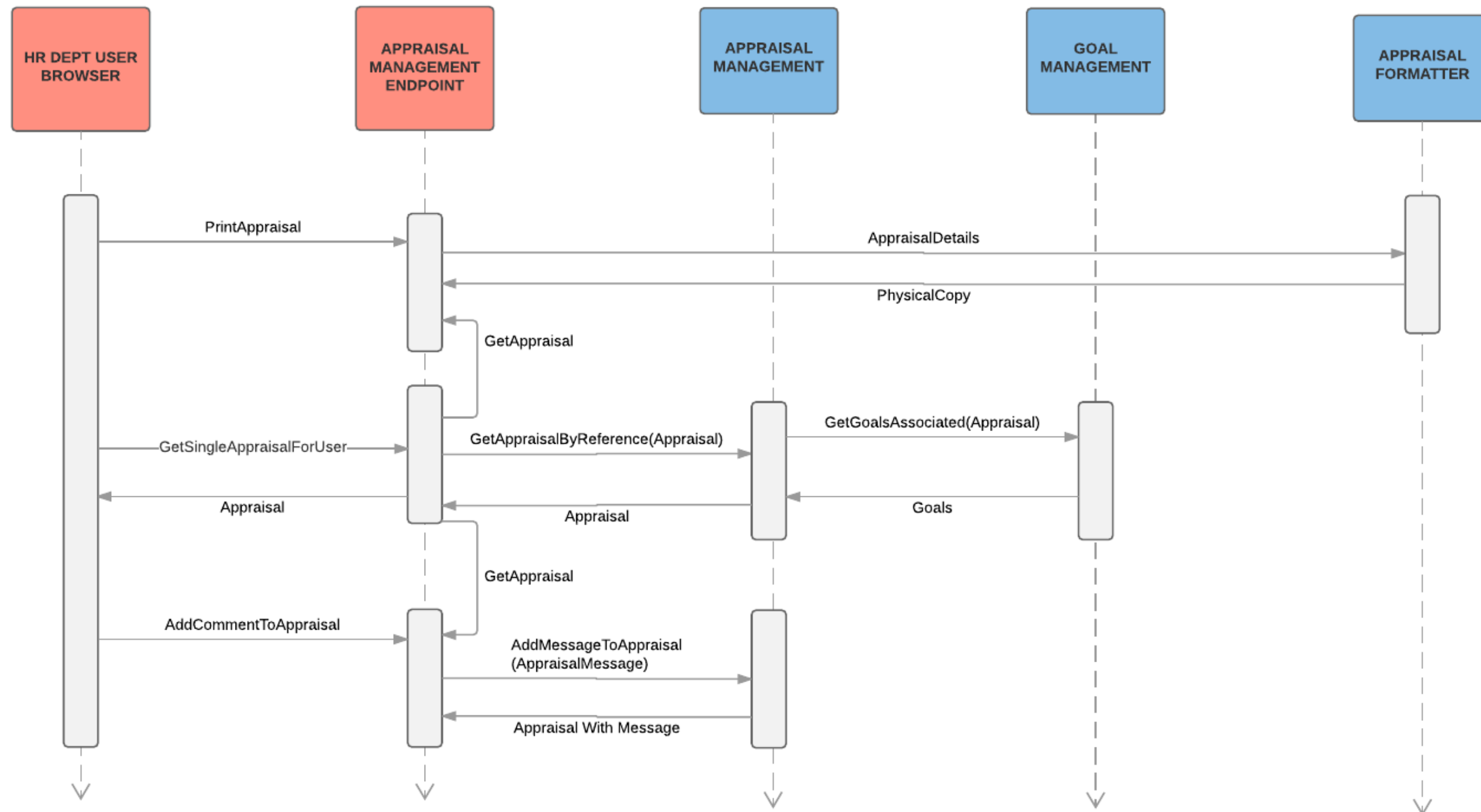
Employee and HR Department Reviewer View

This view details the process of viewing appraisals pending a review from the assigned reviewer. Initially, the reviewer gets a list of all appraisals pending a review (by checking each assigned appraisal for a reviewer and ensuring that the current user is a reviewer of the given appraisal). A list of pending reviews is then passed back to the user. The user can send a review for all the reviews returned (this may be used if the reviewer acknowledges that the appraisers have identified and produced a report based on the goals given by the appraisee). Alternatively, the appraiser can add a view for an individual appraisal, this review is then available to the HR department, appraiser and appraisee.



HR Department Manager

The primary function available to the HR Department Manager is to print the appraisal. This gets every appraisal by appraisal references and the associated goals. The list returned is then passed to the “Appraisal Formatter” where it is formatted into a PDF document. This can then be printed by the user, approved and handed back to the user. Alternatively, the manager can add a comment to a given single appraisal using the appraisee reference. The comment is added to the appraisal which is accessible to the appraiser, reviewer and other members of the HR department.



Correspondences Between Views

1. **Decomposition View** – The decomposition view provides a unit oriented view and a hierarchy system to describe the membership of each unit in regards to more abstract system units.

The decomposition view does not contain details of the internal functions or data transfer. The diagram does not describe more detailed functionality (including front-end functionality essential to the application user experience). However, this diagram does fully detail where the user can expect to find functionality expected from the system.

2. **Dependency View** – The dependency view details how each system unit (for example, a portal) implements developed features.

Compared to the Decomposition View, this diagram details how each component in the system interacts and a basic model of data transfer. However, as with the Decomposition View, this diagram does not detail the exact functions involved in processing the data received from the different functional units detailed on the diagram, nor does it show how data is returned or the parameters required when calling given functions.

3. **Execution View** – The execution view details the method calls within the application to other units (typically other classes). This view completely details the interactions between separate system units.

This view gives the most detail regarding the flow of data into separate system functions and describes the parameters to achieve this data flow. This diagram, however, does not present the reuse of components through dependencies as with the “Dependency View”. This diagram does not present an easy to understand view of how each unit is related in a hierarchy as found in the “Decomposition View”.

Consistency

To maintain consistency between the diagrams, we started by ensuring that everyone working on the different views had a good understanding of the desired structure of the software system. If everyone understands the system, the resulting diagrams should naturally be largely consistent. To further this, while working on a view we also looked at the other views while they were still being worked on themselves. This allowed us to check that they were relatively consistent with the others as it was being made. Finally, after the diagrams were finished, we analysed all the views and made tweaks to fix any remaining inconsistencies.

Design Decisions

The following is a list of the decisions our group made when interpreting the requirements and analysis. These decisions were used to define how we structured our final views.

1. **Unified login** – There should be a single unified login system. This single-entry point will be accessible for all employees of the organisation. Employees that could be an appraisee, appraiser, or reviewer can select which portal they wish to be redirected to after signing in. The unified login system will also allow the HR department to assign and reset user authentication details if they are forgotten or compromised. An alternative for this would be to use different login systems for each portal. We decided against this because the HR department would need to manage more credentials.
2. **Individual portals** – Individual user group portals can be advantageous when you need to have users from one website to login on another site. To both ensure that users are not given access to functionality that they shouldn't have access to, and to restrict the information they don't need, multiple portals should be implemented for different stakeholders (HR, HR Manager, Appraiser, Appraisee). Moreover, functionality that would result in a permissions error can be avoided.
3. **Assigning every appraisal an individual goal** – Each appraisal should be associated with a respective goal. Therefore, the appraiser will review his/her appraisee based on a specific, previously set goal.
4. **Password reset process** – The specific details of the password reset process vary depending on the verification type. Users should have the possibility to reset their password by requesting it from the Human Resources. A new password is sent to the employee's email address. However, if the employee makes repeated password reset requests, the situation must be investigated and eventually the employee's access should be denied.
5. **Reviewing over time** – When the HR department is reviewing the outcomes of the appraisal and review process, they can optionally review previous appraisals to gain a better understanding of the appraisee's improvement over time and whether they are reaching targets set before this year's appraisal.
6. **Notifications** – Users will receive notifications by email when a review or appraisal has been assigned by the HR department or when the appraisal has been altered. These notifications will be sent to the user's email address. An alternative would be to not include notifications. We decided against this as it would be difficult for employees to identify which appraisals and reviews are due.
7. **Pending reviews** – Reviewers can collate all reviews that need to be completed for each appraisal into a single view where they can easily select which appraisal to create a review for. Optionally, reviewers can add further filters to the pending review list to better filter or sort the pending review list.

8. **User permissions** – To ensure that each user has permission (granted by the HR department) to edit or submit each appraisal or review, the permissions and group memberships are confirmed on each new submission.
9. **Collating appraisals** – To make it easier for HR personal to accept an appraisal, multiple appraisals can be viewed in a single interface and they can be approved in bulk. This allows for a more streamlined system and helps to reduce the amount of time spent submitting appraisals.
10. **HR Role assignment** – The HR department can assign appraisers and reviewers to specific members of the organisation. An alternative would be to allow each member of the organisation to request permissions to review an appraisal or appraise a specific employee. We decided against this approach as this would lead to the incorrect employees appraising other employees.
11. **Allowing for physical or virtual copies for the HR manager** – The HR manager for the organisation can choose to download and print either a physical copy (which can then be signed, printed and handed to the appraisee) or a virtual copy that can be emailed to the appraisee.
12. **Appraisal comments** – To allow the appraiser to understand where to improve the appraisal, comments can be added to the appraisal which define how the appraisal can better address the user and the set of goals the appraisal is defined against.
13. **Unified Login Portal** – We decided against using a single unified login portal, as one user may be multiple roles at once, for example a HR department employee and an appraisee. To ensure that they can only act as one of these roles at a time, we opted for separate portals with their own defined functionality.