Iteration 1

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1 GitHub Repository

`https://github.com/czektser/BearAblePublications`

2 Project Vision:

To allow all publications written by Baylor Faculty along with associated grants to be auto-populated from designated sources. Once the publications are in the BearAble system, authenticated users can add publications and grants, as well as blacklist publications for publications authored by the authenticated user. Users with baylor.edu email addresses can register for an account and authenticate by requesting a token via email. A system administrator can create and remove users, publications, grants and departments as well as blacklist sources.
Unauthenticated users can view publications by department via the UI or a RSS feed plugin. The publications will include links to the DOI, citations, and statistics. Publications loaded into the UI will be cached for 7 days since they were last requested.
This allows for students and professors to focus on their work instead of manually adding publications.

3 Requirements

1. Allow users to authenticate to the management system
2. Allow only users with a baylor.edu email address to create an account
3. Only authenticated users can manage their own publications.
4. In the event of multiple authors for a publication, it will trust the actions of any authenticated author of the paper
5. A system administrator will be designated at system setup.

6. The system administrator will be required to use a baylor.edu email address.
7. When a system administrator is selected, a token will be emailed to the designated address
8. The designated administrator has 15 minutes to authenticate to allow system setup to complete
9. Tokens expire 15 minutes from creation
10. Tokens will be sent to users on login
11. Unauthenticated users can view publications
12. An administrator can create publications
13. An administrator can delete publications
14. An administrator can blacklist publications
15. An administrator can blacklist sources
16. An administrator can create departments
17. An administrator can delete departments
18. An administrator can create users
19. An administrator can delete users
20. An administrator can edit users
21. An administrator can expire tokens
22. An administrator can create grants on publications
23. An administrator can edit grants on publications
24. An administrator can delete grants
25. An authenticated user can create publications where they are an author
26. An authenticated user can delete publications that contain the user as an author
27. An authenticated user can add grants to their publications
28. An authenticated user can edit grants on their publications
29. An authenticated user can delete grants from their publications
30. A user can request a login token
31. A user can authenticate
32. A user with a non baylor.edu email will be denied an account

33. A non baylor.edu email that attempted registration will be provided a message that they must register using a baylor.edu email
34. Publications will be discovered and added from designated sources
35. Blacklisted sources will not be scraped
36. All deletes will be soft deletes
37. Audit records will be created for account creation
38. Audit records will be created for account deletion
39. Audit records will be created for grant creation
40. Audit records will be created for grant updates
41. Audit records will be created for grant deletion
42. Audit records will be created for publication creation
43. Audit records will be created for publication updates
44. Audit records will be created for publication deletion
45. Audit records will be created for Source creation
46. Audit records will be created when a Source is blacklisted
47. A RSS feed plugin will be made available for publications
48. Publications will be cached for 7 days
49. Publications will not be duplicated
50. Publications will list the sources that it was found on
51. Publications will list grant funding

4 Use Cases

Use Case UC1: Create Account
Level: User Goal
Primary Actor: User
Stakeholders and Interests:

- User: Wants an easy and quick account creation process.
- Authentication System: Wants to ensure the users belong to Baylor and that their email is legitimate.

- Authentication System: Needs to send users login tokens.
- Authentication System: Needs to ensure login tokens are secure (expire) and are not duplicated in that timeframe.
- Authentication System: Needs to define roles.
- Application: Honors Role Based Authentication (RBAC).
- Application: Needs to display or restrict content based on roles.
- Authentication System: Needs an initial super admin to administer the site.
- User: Needs to be able to log into the application.
- Super Admin: Can disable, enable, and delete users
- Super Admin: Can see the user's last login time

Preconditions: None
Success Guarantee (or Postconditions): User is created. Unique login token is created. Login token is emailed to the user. Super admin account is created. Users can be assigned roles. Users can login. Users can see content associated with their roles. The super admin can admin users.
Main Success Scenario (or Basic Flow):

1. User creates account.
2. The System ensures the email is a Baylor.edu email.
3. The system sends a login token to the user's email.
4. The user uses the login token to authenticate to the system.

Extensions (or Alternate Flows):

1. Email provided is not a baylor.edu email address.
    1.1. The system signals an error to the user that a baylor.edu email must be used.
2. The baylor.edu email for the user does not exist.
    2.1. The emailed login token will never reach the end user
    2.2. The login token will expire after 15 minutes
    2.3. The user will be unable to login
3. The user has received the login token but has not logged in within 15 minutes.
    3.1. The login token will expire
    3.2. The user's login will be rejected.
    3.3. The system will return an error.

3.4. The user will be informed that their login token is no longer valid.

4. The user enters an incorrect login token.

   4.1. The system will return an error

   4.2. The user will be informed the login failed

5. On system initialization (w/ baylor.edu email) and super admin logs in

   5.1. The system will prompt the installer to designate a super admin.

   5.2. The installer will supply the email address of the super admin.

   5.3. If the supplied user is a baylor.edu email, the super admin account will be created.

   5.4. The super admin role will be assigned to the created user

   5.5. The system will email the super admin that they are now a super admin along with a login token.

   5.6. The super admin logs into the system with the login token.

   5.7. The system confirms the super admin.

   5.8. The system completes setup.

   5.9. The system informs the installer setup is complete.

6. On system initialization (w/ non baylor.edu email)

   6.1. The system will prompt the installer to designate a super admin.

   6.2. The installer will supply the email address of the super admin.

   6.3. The system will return an error stating that the super admin must have a baylor.edu email.

   6.4. The setup will prompt the user until it receives a baylor.edu email

7. On system initialization (w/ baylor.edu email) and super admin does not login

   7.1. he system will prompt the installer to designate a super admin.

   7.2. The installer will supply the email address of the super admin.

   7.3. If the supplied user is a baylor.edu email, the super admin account will be created.

   7.4. The super admin role will be assigned to the created user

   7.5. The system will email the super admin that they are now a super admin along with a login token.

   7.6. If the super admin does not login within 15 minutes, the token expires

   7.7. The super admin account is deactivated

   7.8. The system returns an error stating that the super admin account has not been confirmed

   7.9. The setup will prompt the user until it receives a baylor.edu email and the super admin has logged in

Special Requirements:

– Newly created users will automatically be created with a standard user and the admin will have to assign other roles

Technology and Data Variations List:
None
Frequency of Occurrence: Could be nearly continuous.
Open Issues:

– Research which portions of this solution already exist.

– How will we email users?

– How will login tokens be generated and guaranteed to be unique?

– Which Roles will we need to create?

Use Case UC2: View Publications
Level: User Goal
Primary Actor: User
Stakeholders and Interests:

– User: Wants to view publications

– Publication System: Wants to ensure the publications belong to Baylor students or faculty.

– Application: Needs to return requested publications

– Super Admin: Can blacklist publications so they can't be viewed

Preconditions:

- User has access to the Publication Database website.
- Publication Database contains records of publications **Success Guarantee (or Postconditions):** User has viewed a list of publications sorted by year for the selected department's faculty members
  Main Success Scenario (or Basic Flow):
  1. User selects the "Faculty Publications" option on the website.
  2. User is presented with a list of departments to choose from.
  3. Publication API retrieves the publications for the selected department from the Publication Database.
  4. Publication Database sorts the publications by year.
  5. Publication API presents the publications retrieved from the Publications Database to the user

Extensions (or Alternate Flows):

1. The user selects a department with no publications.
   1.1. The Publication API will return a message indicating that there are no publications available.
   1.2. The UI will display a message indicating that there are no publications available for the selected department.
2. The Publication Database is down or experiencing technical difficulties
   2.1. The user will be notified that the service is unavailable

Special Requirements:

- The user can select only one department at a time.
- Only publications related to the selected department will be presented to the user
- The publications are sorted by year in descending order.

Technology and Data Variations List:
None
Frequency of Occurrence: Could be nearly continuous.
Open Issues: none

Use Case UC3: Grouping of Publications by Department or Theme
Level: User Goal
Primary Actor: User
Stakeholders and Interests:

- User: Wants to view publications grouped by department or theme
- Application: Needs to display publications in requested order

Preconditions:

- User has access to the Publication Database website.
- The User has a basic understanding of the system and its functionality.
- The Publication Database has a list of faculty publications, grouped by departments and themes. **Success Guarantee (or Postconditions):** The User has viewed a list of publications sorted by year, based on the selected department and theme.
  Main Success Scenario (or Basic Flow):

  1. The User opens the Publication Website
  2. The User selects the department from the department list.
  3. The Faculty Publication Database displays a list of publications sorted by year based on the selected department.

4. The User selects the theme filter to narrow down the result.
5. The UI hides publications that don't match the filtered theme.
6. The User can view the details of the publication by clicking on the publication title
7. The User can continue to view the publications of the selected department and theme until they have found the desired information.
8. The User can remove the filter to redisplay the hidden publications
9. The User can apply another filter to hide irrelevant publications.

Extensions (or Alternate Flows):

1. The user selects a department with no publications.
   1.1. The Publication API will return a message indicating that there are no publications available.
   1.2. The UI will display a message indicating that there are no publications available for the selected department.
2. The Publication Database is down or experiencing technical difficulties
   2.1. The user will be notified that the service is unavailable

Special Requirements:

- The user can select only one department at a time.
- Only publications related to the selected department and filtered theme will be presented to the user
- The publications are sorted by year in descending order.

Technology and Data Variations List:
None
Frequency of Occurrence: Could be nearly continuous.
Open Issues: none

Use Case UC4: Publication Administration
Level: User Goal
Primary Actor: Super Admin and Authenticated User
Stakeholders and Interests:

- Administrator: Wants to have the ability to add, update, and delete all publications as well as blacklist publication sources
- Registered User: Wants to add, edit, and delete their own publications.
- Application: Needs to have publications and sources maintained as well as prevent unauthorized users from adding, removing, or editing publications.

Preconditions:

- User has access to the Publication Administration website.
- The User has a basic understanding of the system and its functionality.
- The Super Admin and Registered User have a valid Baylor email and login token.
- The Publication Database has a list of publications. **Success Guarantee (or Postconditions):** The Administrator can update, delete, and edit publications as well as blacklist sources. A registered user can add, edit, or delete their own publications.
  Main Success Scenario (or Basic Flow):

  1. The Administrator or Registered User accesses the Publication website.
  2. The user attempting to login requests a token from the authentication system.
  3. The user authenticates with the provided token
  4. The administration page is displayed
  5. If the user is an administrator, all publications are visible
  6. If the user is a registered user, only their own publications are displayed
  7. The administrator can see grants and sources and has the ability to interact with grants or blacklist sources.
  8. The publication database updates the records according to user actions.

  Extensions (or Alternate Flows):

  1. Login credentials are invalid
     1.1. The authentication system will return an error.
     1.2. The UI will display the error from the authentication system.
     1.3. The user will have the opportunity to login again
  2. The Publication Database is down or experiencing technical difficulties
     2.1. The user will be notified that the service is unavailable

  Special Requirements:

  – Only the administrator can grant roles to other users.
  – The administrator and the registered users must have a valid Baylor email and login token to access the system.
  – Only publications related to the selected department and filtered theme will be presented to the user.
  – The user must enter the required information for the action they are performing.

  Technology and Data Variations List:
  None
  Frequency of Occurrence: Could be nearly continuous.
  Open Issues: none

Use Case UC5: Publication Caching
Level: System Goal
Primary Actor: Publication API
Stakeholders and Interests:

- Publication API: Wants to quickly retrieve frequently accessed publications.
- Cache: Wants to expire old records

Preconditions:

- The publication API is being used to fetch publications
- The Publication Database has a list of publications. **Success Guarantee (or Postconditions):** If a publication is not in the cache, it is added when requested. If a cache entry is more than 7 days old, it is expired from the cache.
  Main Success Scenario (or Basic Flow):

  1. The Publication API checks the cache for the requested publication.
  2. If the publication is not in the cache, it is retrieved from the database and added to the cache.
  3. If the publication is in the cache, the publication is returned from the cache and the last accessed time is updated to the current time. This allows frequently accessed publications to remain in the cache.
  4. Any records older than 7 days will be removed from the cache

  Extensions (or Alternate Flows):

  1. Cache is unavailable
     1.1. Results are fetched directly from the database
  2. A publication is removed or edited
     2.1. Any associated cache entries must be expired. This will prevent inaccurate information from being returned from the cache.

  Special Requirements: None **Technology and Data Variations List:**
  None
  Frequency of Occurrence: Could be nearly continuous.
  Open Issues: None

Use Case UC6: Publication Deduplication
Level: System Goal
Primary Actor: Publication Fetching System
Stakeholders and Interests:

- Publication System: Wants to prevent duplicated publications

– Registered User or Administrator: Wants to merge publications that weren't automatically deduplicated

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Preconditions:

- The publication Fetching system is fetching publications from designated sources.
- The Publication Database has a list of publications. **Success Guarantee (or Postconditions):** If a publication already exists, it will be merged with the existing publication. If a publication is not automatically deduplicated, an administrator or registered user can manually merge them.
  Main Success Scenario (or Basic Flow):

  1. The Publication Fetching system checks the database for a matching publication.
  2. If a matching publication exists, merge relevant information and update the source if necessary.
  3. If a registered user or administrator finds multiple publications that were not automatically deduplicated, they can manually be merged.
  4. User may be presented with a merge conflict resolution.

  Extensions (or Alternate Flows):

  1. Publications are unable to merge
     1.1. Both publications will be entered into the database in a pending state
     1.2. Administrator will be notified to manually merge the publications

  Special Requirements: None **Technology and Data Variations List:**
  None
  Frequency of Occurrence: Could be nearly continuous.
  Open Issues: None

Use Case UC7: Fetch Publications
Level: System Goal
Primary Actor: System
Stakeholders and Interests:

– Faculty: Wants an easy way to automatically retrieve publications from external sources to display up-to-date publications on their website.

– Users: Want a simple way to view publications written by Baylor faculty.

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Preconditions:

- The system is configured to retrieve from at least one publication source.
- The system has users to search publications for **Success Guarantee (or Postconditions):** Publications are fetched for registered users from designated sources.
  Main Success Scenario (or Basic Flow):

  1. Cronjob runs on a determined schedule and fetches relevant publications from designated sources.
  2. Publications are retrieved and stored in the publication database, where they are associated with relevant users.

  Extensions (or Alternate Flows):

  1. Can't access source or error in retrieving publications
     1.1. An error will be logged
     1.2. A notification will be sent to the administrator

  Special Requirements: Works with the publication deduplication system
  Technology and Data Variations List:
  None
  Frequency of Occurrence: Could be daily or hourly
  Open Issues: None

Use Case UC8: Add Grant Funding
Level: User Goal
Primary Actor: User
Stakeholders and Interests:

- Faculty: Wants to be able to add grant funding information to display alongside publication information on their faculty website.
- Users: Want a simple source of publication information that is up to date with grant funding information if applicable.
-

Preconditions:

- The publication that is associated with the grant exists.

Success Guarantee (or Postconditions): Publications are associated with applicable grants
Main Success Scenario (or Basic Flow):

1. Administrators select a publication or registered users can select their own publications.
2. User selects to add grant funding
3. User inputs grant information
4. User confirms grant information
5. The system adds the grant information to the database
6. Publications are retrieved and stored in the publication database, where they are associated with relevant users.

Extensions (or Alternate Flows): None
Special Requirements: None
Technology and Data Variations List:
None
Frequency of Occurrence: Could be constant
Open Issues: None

Use Case UC9: Publication Feed Plugin
Level: User Goal
Primary Actor: User
Stakeholders and Interests:

- Faculty: Wants a simple way to easily display publication information on their websites using an embeddable plugin.
- Users: Want a source of publication information that is up to date.
-

Preconditions:

- The author who publications will be displayed for must be registered

Success Guarantee (or Postconditions): RSS feed plugin displays publications for the requested author
Main Success Scenario (or Basic Flow):

1. Administrators select a publication or registered users can select their own publications.
2. User configures plugin for which author(s) to fetch publications for
3. Feed is created and exported

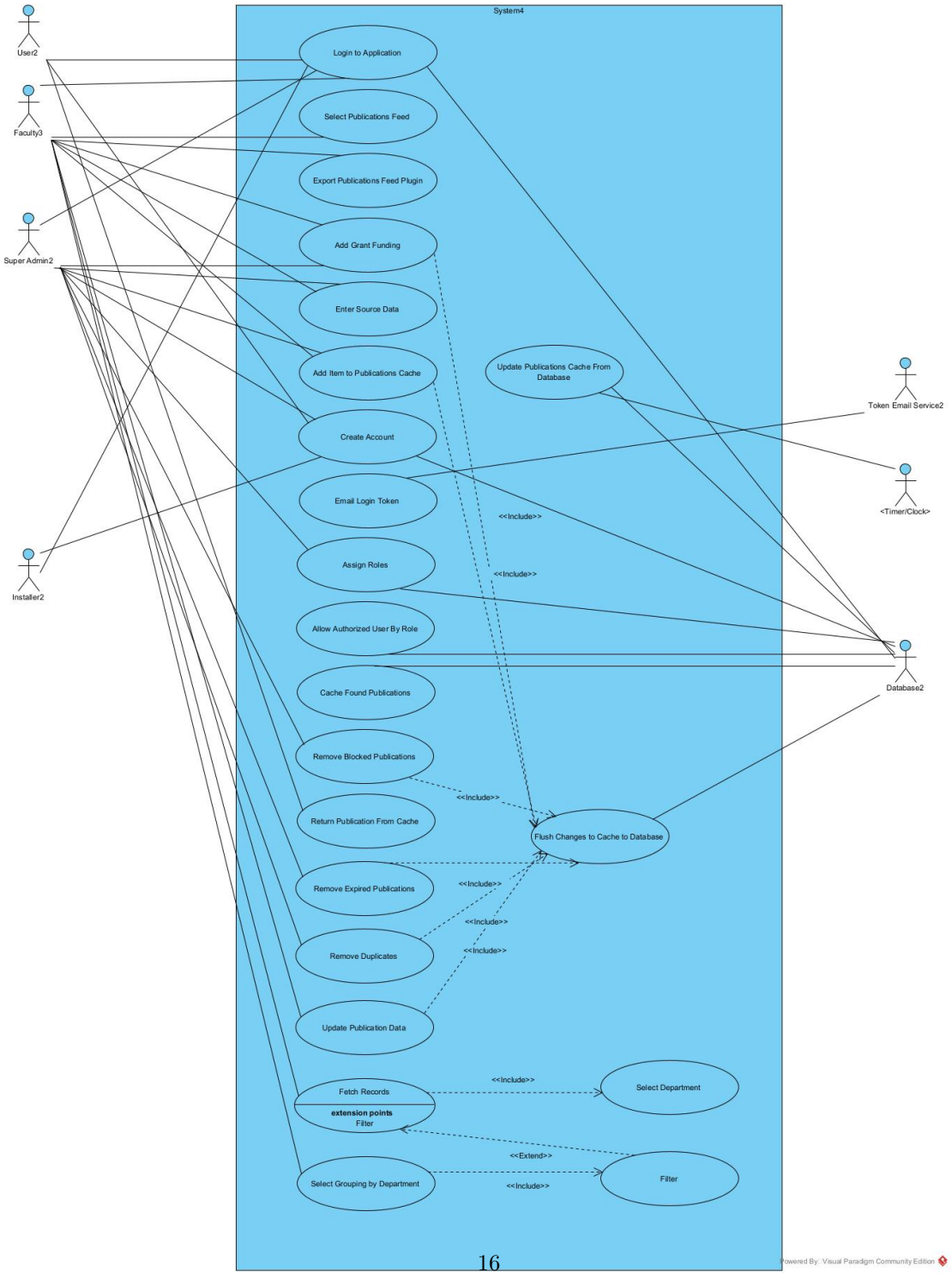
Extensions (or Alternate Flows):

1. Feed requests an unregistered user

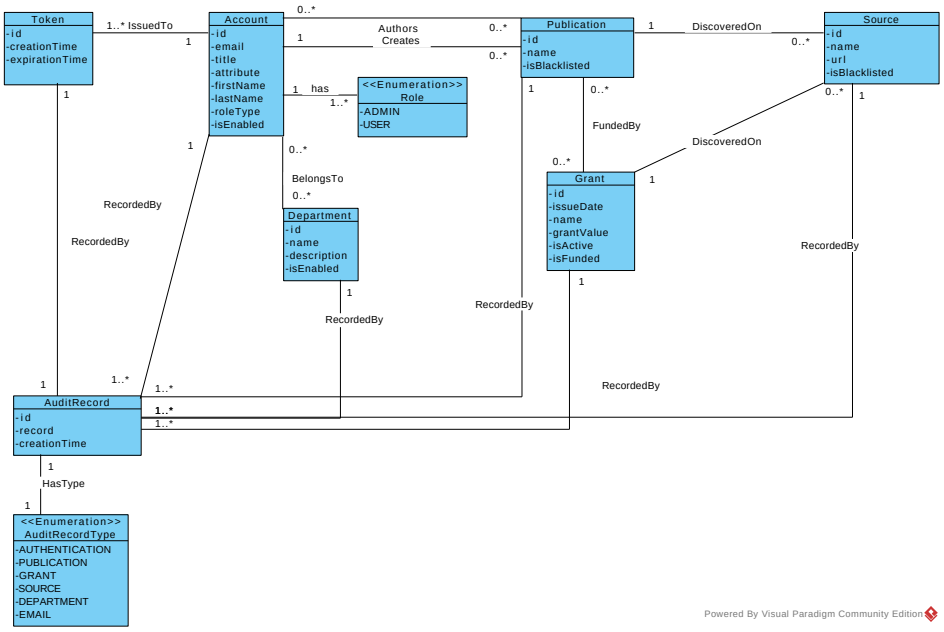
    1.1. No publications will be returned

Special Requirements: None
Technology and Data Variations List:
None
Frequency of Occurrence: Could be constant
Open Issues: None

5 Use Case Diagram

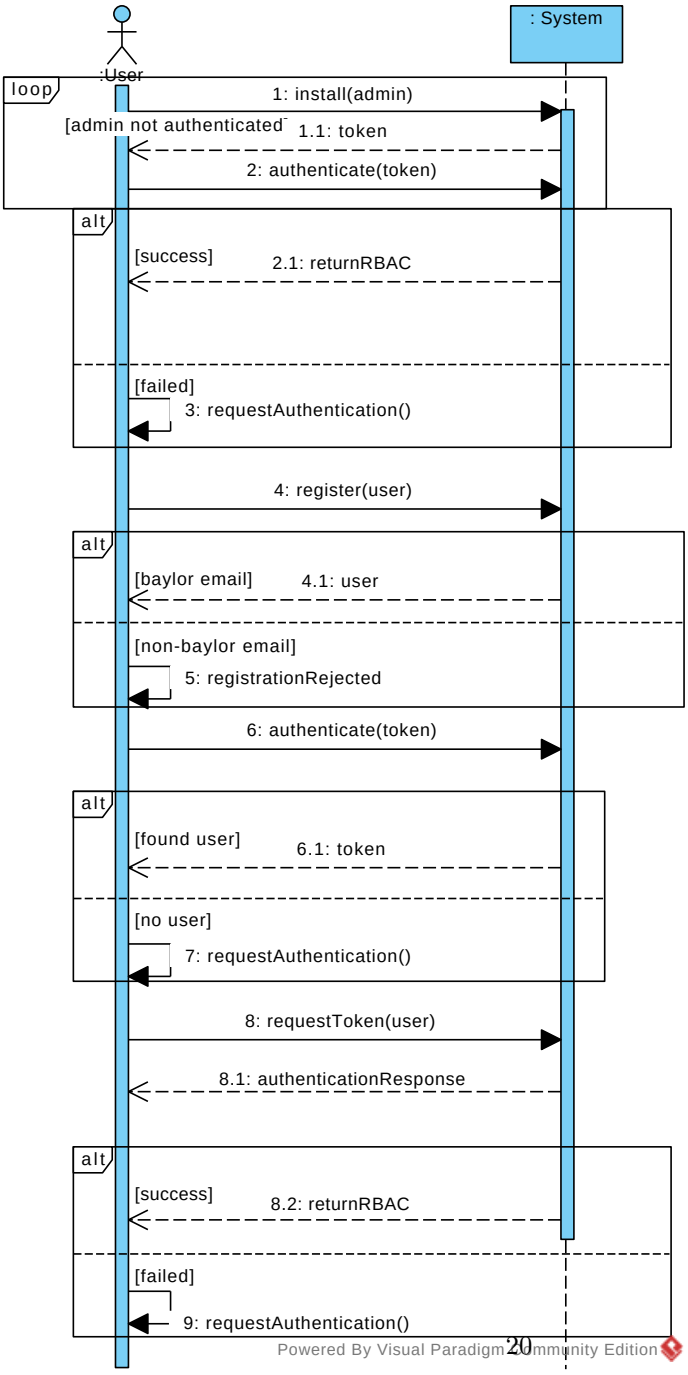


6 Domain Model

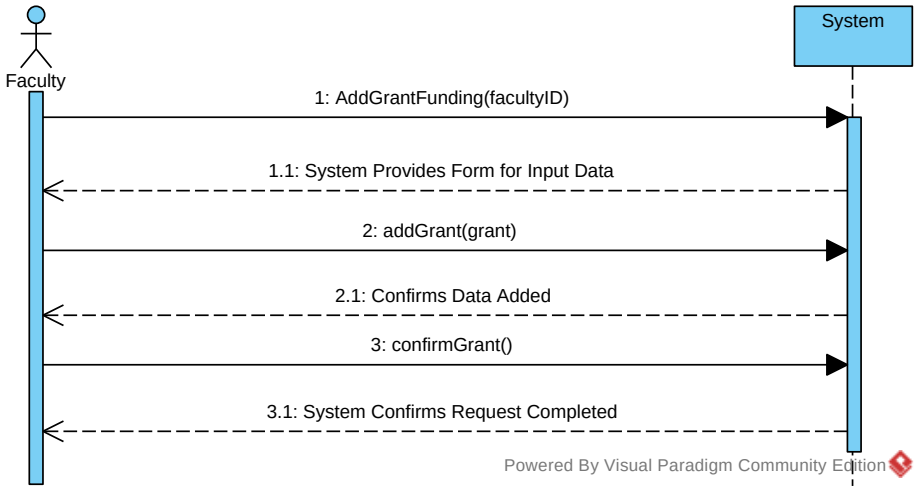


7 System Sequence Diagrams

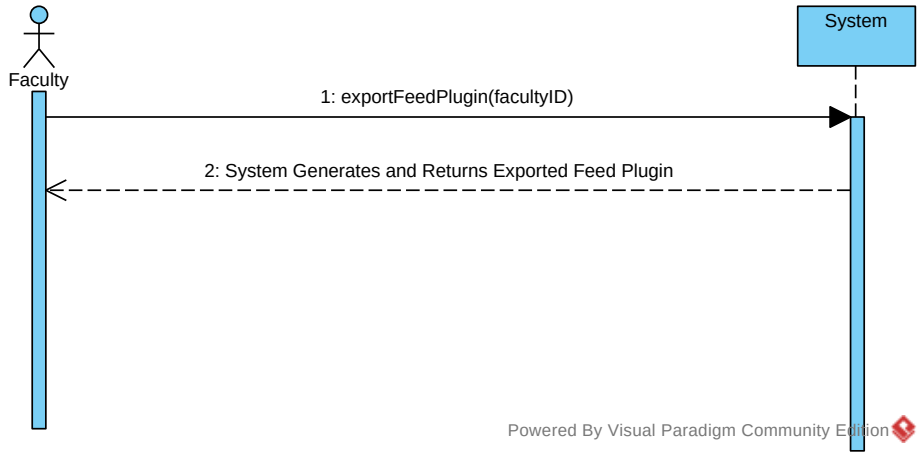
7.1 Authentication System



7.2 Add Grant Funding

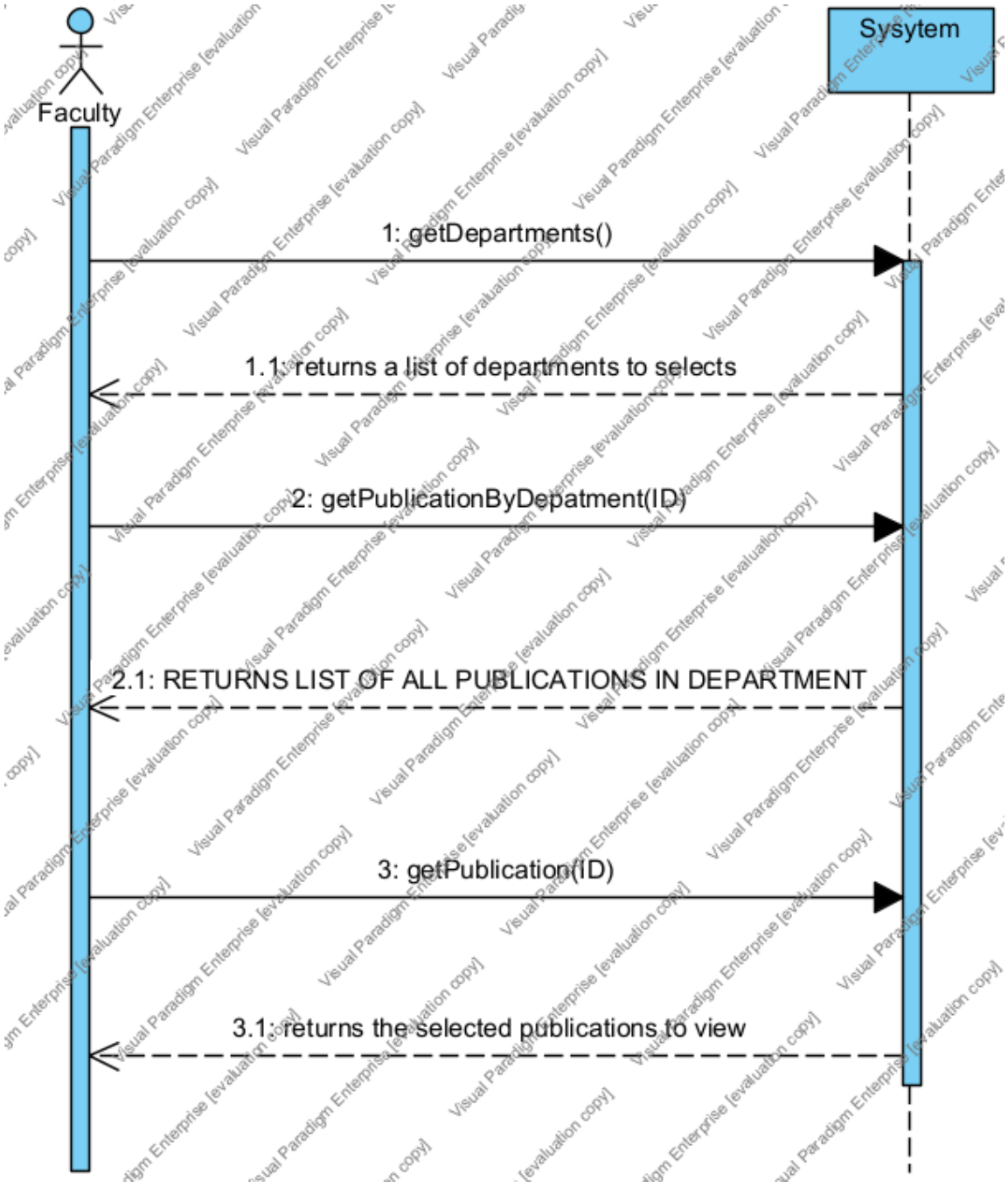


7.3 RSS Feed Plugin

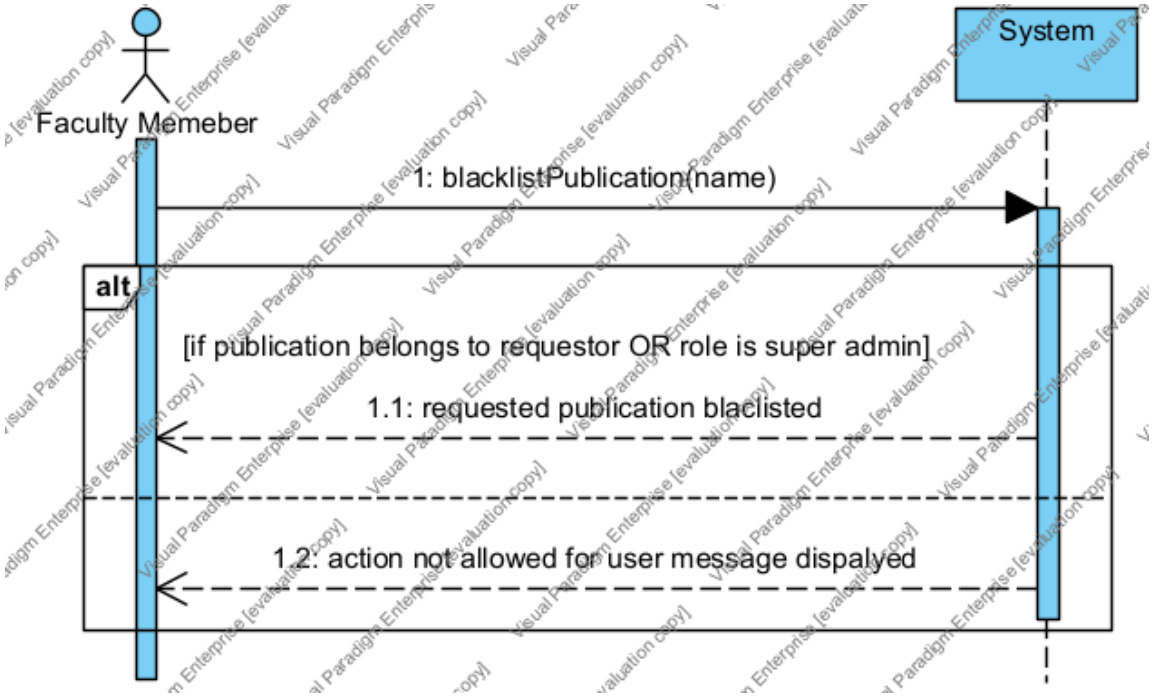


7.4 Fetch Publications

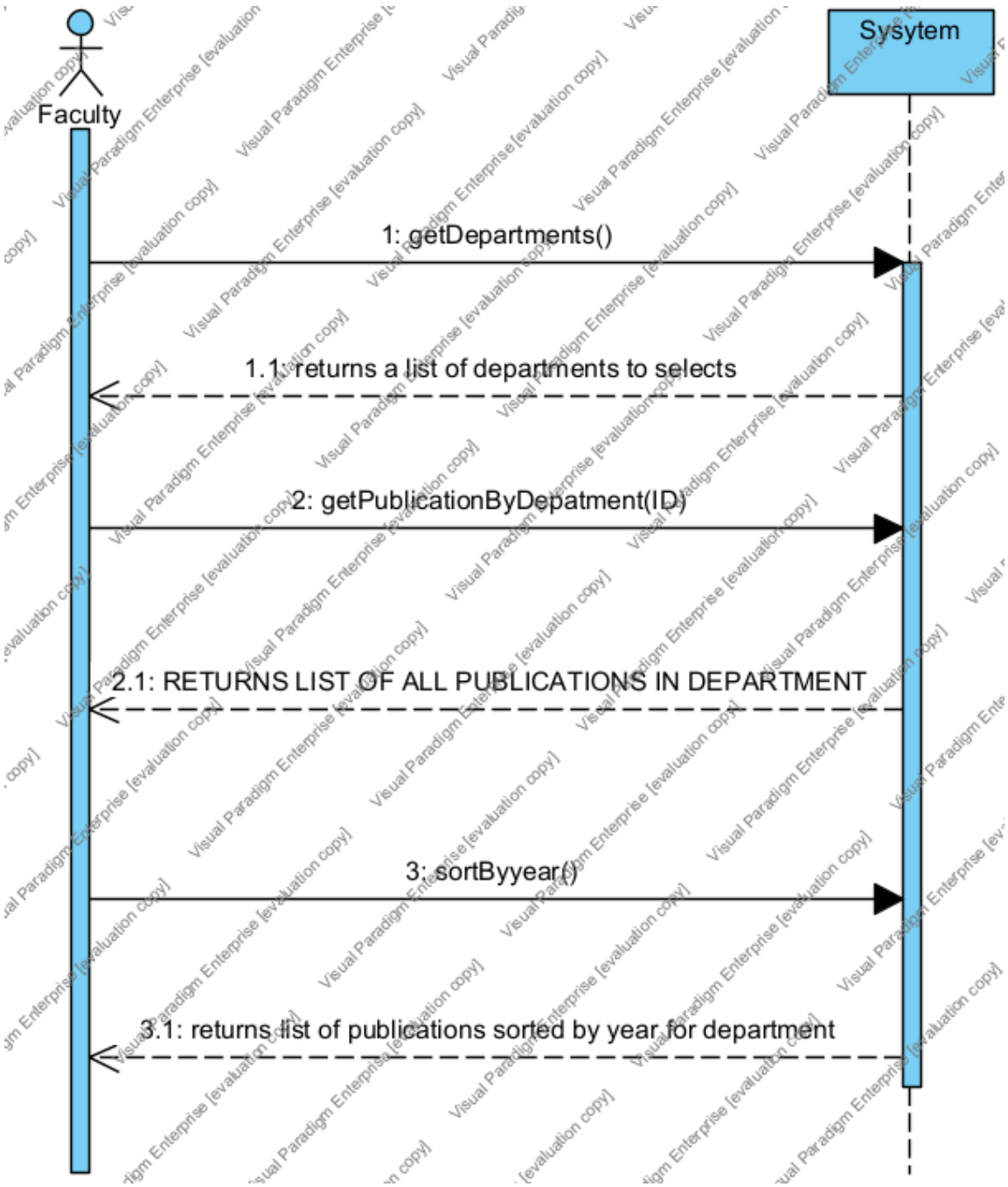
7.5 Retrieve Publications for API



7.6 Publication Blacklist



7.7 Group Publications



8 System Operations

- install(adminUser)
- authenticate(token)
- requestToken(user)
- register(user)
- addGrant(grant)
- deleteGrant(grantId)
- updateGrant(grant)
- requestFeed(author)
- fetchFromSource(source)
- getDepartments()
- getPublicationsByDepartmentId(departmentId)
- getPublication(id)
- blacklistPublication(id)

9 Operation Contracts

9.1 Operation Contract: install

Operation: install(adminUser)
Cross References: user
Precondition: The system is being installed
Post Conditions:

- The administrator authenticates with their token and installation completes
- The administrator does not authenticate within 15 minutes and the installation asks for an administrator to continue
- The administrator fails authentication and is prompted to try again

9.2 Operation Contract: authenticate

Operation: authenticate(token)
Cross References: user, token
Precondition: The user is registered
Post Conditions:

- The user authenticates successfully
- The user does not authenticate within 15 minutes and the token expires and the user needs to request a new token
- The user's authentication fails and is prompted for authentication again

9.3 Operation Contract: requestToken(user)

Operation: requestToken(user)
Cross References: user, token
Precondition: The user is registered
Post Conditions:

- A token is returned to the user
- The user does not exist
- The user is disabled

9.4 Operation Contract: register

Operation: register(user)
Cross References: user
Precondition: The user is not registered
Post Conditions:

- The user has a baylor.edu email and is sent a token
- The user does not have a baylor.edu email and is told they must have a baylor.edu email to register
- The user already exists

9.5 Operation Contract: addGrant

Operation: addGrant(grant)
Cross References: grant, publication

Precondition: The associated publication exists
Post Conditions:

- The grant is created and added to the publication

9.6 Operation Contract: updateGrant

Operation: updateGrant(grant)
Cross References: grant, publication
Precondition: The associated publication exists and the requested grant exists
Post Conditions:

- The grant is updated

9.7 Operation Contract: deleteGrant

Operation: deleteGrant(grantId)
Cross References: grant, publication
Precondition: The requested grant exists
Post Conditions:

- The grant is soft deleted

9.8 Operation Contract: requestFeed

Operation: requestFeed(author)
Cross References: grant, publication, user
Precondition: The requested author exists
Post Conditions:

- Associated publications and information are returned on a subscription basis

9.9 Operation Contract: fetchFromSource

Operation: fetchFromSource(source)
Cross References: publication, user
Precondition: Sources are configured and users exist
Post Conditions:

- Associated publications are returned from designated sources
- Fetched Publications are added to the Publication Database

9.10 Operation Contract: getDepartments

Operation: getDepartments()
Cross References: departments
Precondition: Departments exist
Post Conditions:

- All created departments return from the departments database

9.11 Operation Contract: getDepartmentsByPublicationId

Operation: getDepartmentsByPublicationId(id)
Cross References: departments, publications
Precondition: Departments exist and publications exist
Post Conditions:

- All publications associated with the requested department are returned

9.12 Operation Contract: getPublication

Operation: getPublication(id)
Cross References: publications
Precondition: Publications exist
Post Conditions:

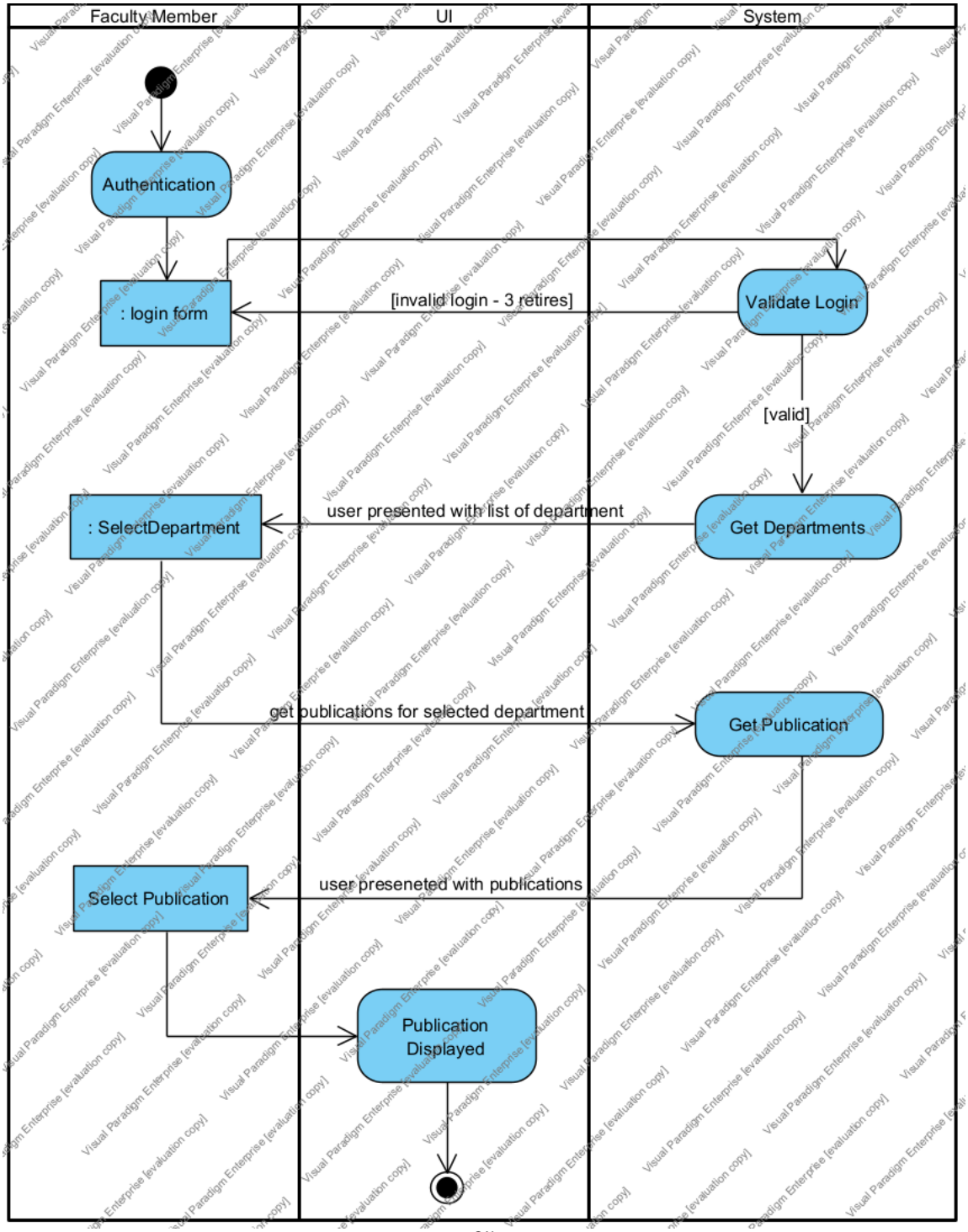
- The publication with the requested id is returned

9.13 Operation Contract: blacklistPublication

Operation: blacklistPublication(id)
Cross References: publications
Precondition: Publications exist
Post Conditions:

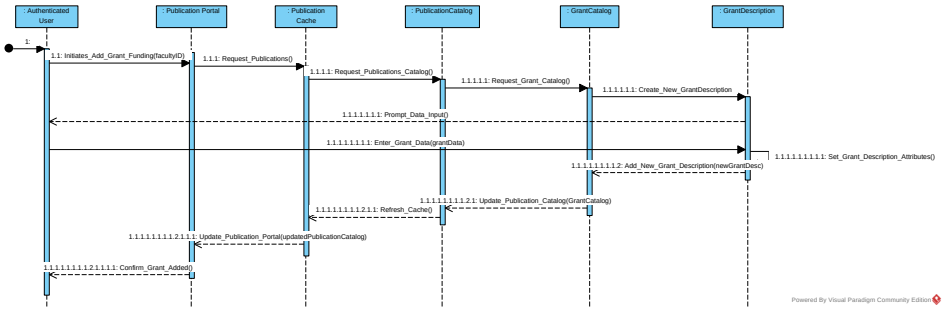
- Requested publication will be blacklisted
- Sources will no longer attempt to fetch the publication
- The publication will no longer appear in the RSS feed or in the UI

10 Activity Diagram: View Faculty Publication

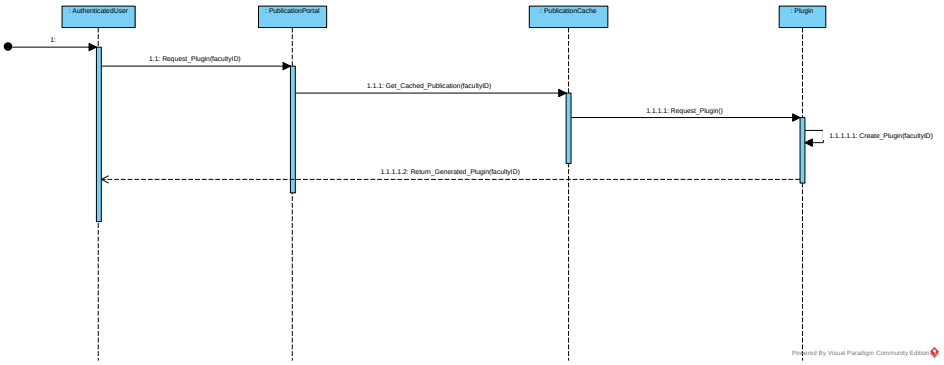


11 Sequence Diagrams

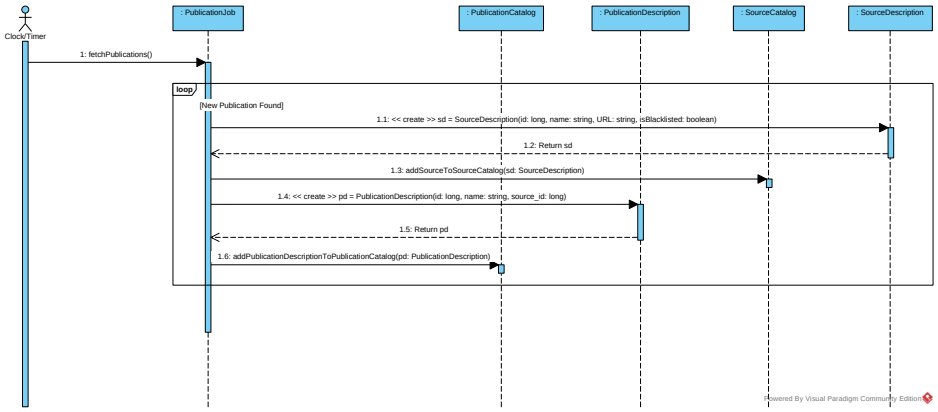
11.1 Add Grant Funding



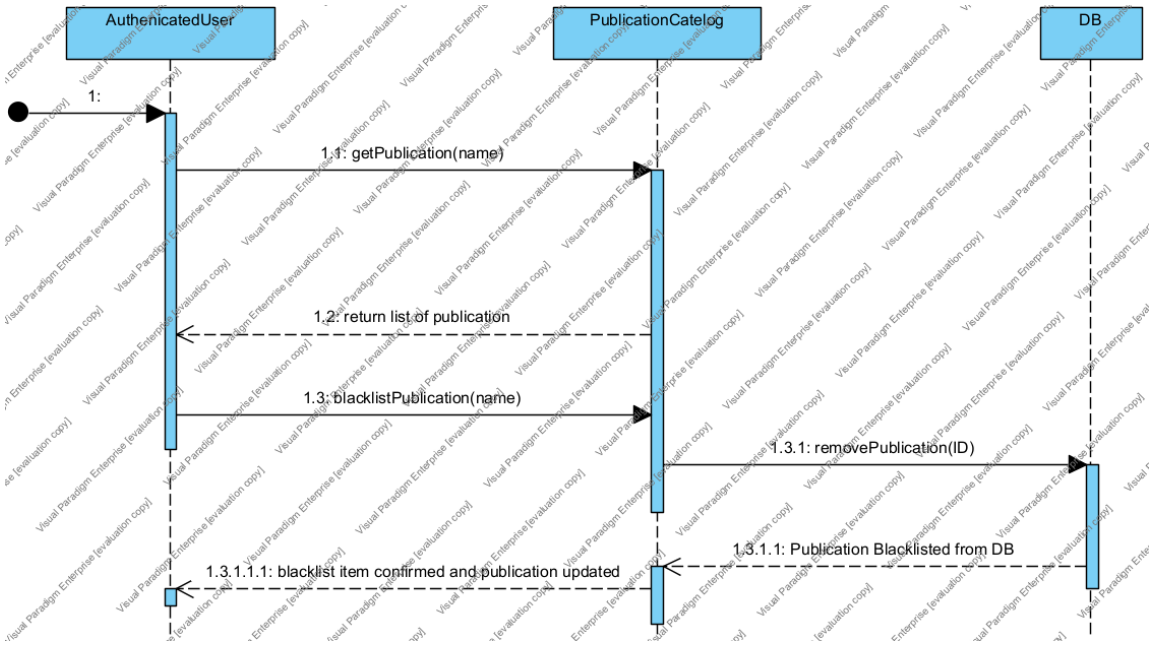
11.2 RSS Feed Plugin



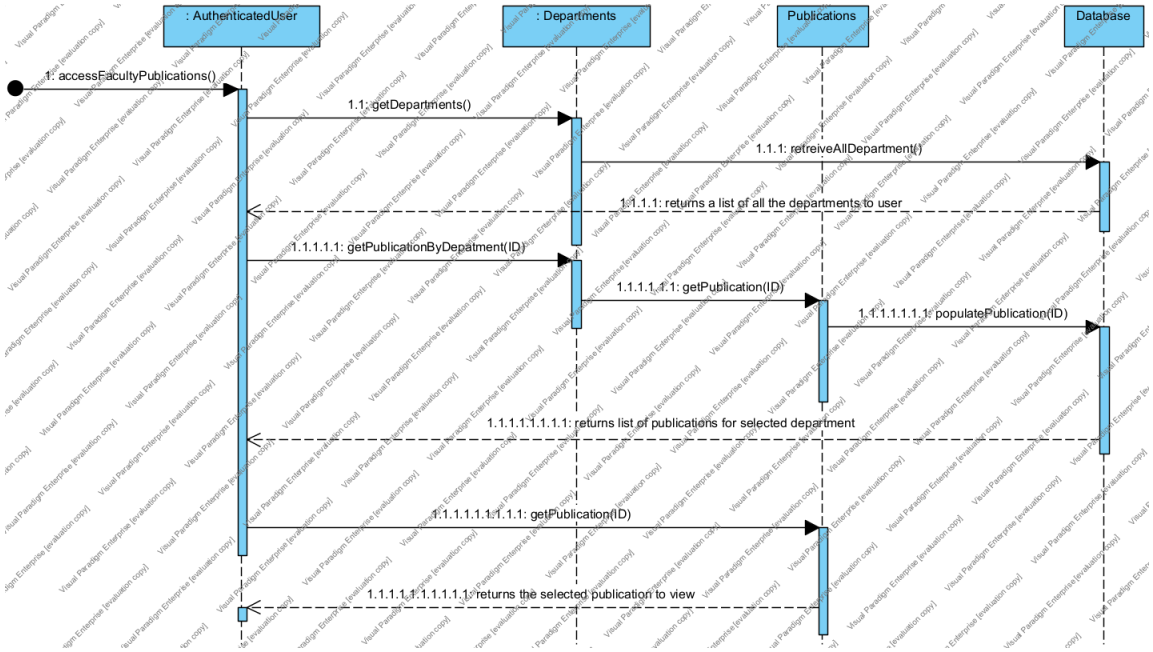
11.3 Fetch Publications



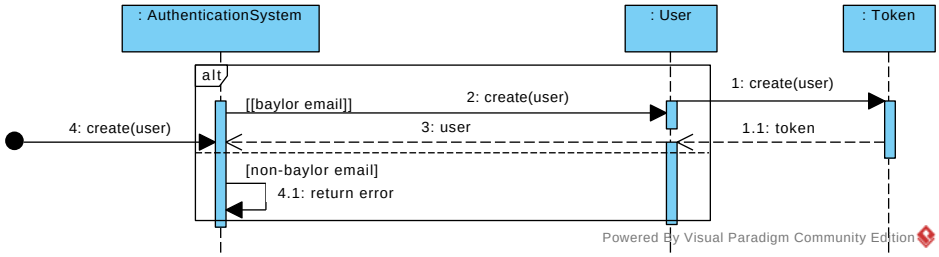
11.4 Blacklist Publications



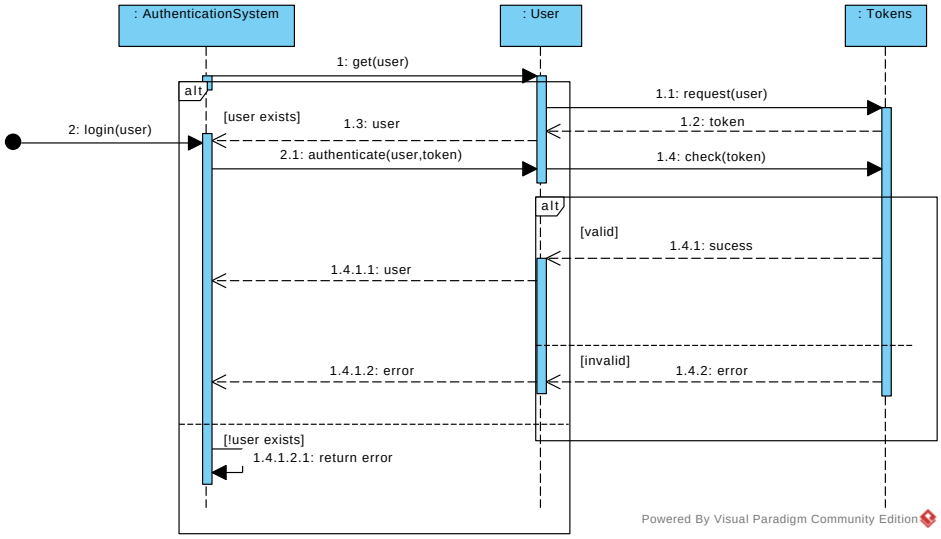
11.5 Request Publications



11.6 Create User



11.7 Login


: AuthenticationSystem
: User
: Tokens
1: get(user)
alt
[user exists]
1.3: user
2: login(user)
2.1: authenticate(user,token)
1.1: request(user)
1.2: token
1.4: check(token)
alt
[valid]
1.4.1: sucess
1.4.1.1: user
[invalid]
1.4.2: error
1.4.1.2: error
[!user exists]
1.4.1.2.1: return error
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