

# Table of Contents

## [Table of Contents](#)

### [Data Types](#)

[USER](#)

[CORKBOARD](#)

[PUSHPIN](#)

[COMMENT](#)

### [Business Logic Constraints](#)

[USER](#)

[CORKBOARD](#)

[PUSHPIN](#)

[COMMENT](#)

### [Task Decomposition & Abstract Code](#)

#### [Login](#)

[Task Decomposition](#)

[Abstract Code](#)

#### [View Home Screen](#)

[Task Decomposition](#)

[Abstract Code](#)

#### [Add Corkboard](#)

[Task Decomposition](#)

[Abstract Code](#)

#### [View Corkboard](#)

[Task Decomposition](#)

[Abstract Code](#)

#### [Add Pushpin to Corkboard](#)

[Task Decomposition](#)

[Abstract Code](#)

#### [Follow User](#)

[Task Decomposition](#)

[Abstract Code](#)

#### [Watch Corkboard](#)

[Task Decomposition](#)

[Abstract Code](#)

## [Table of Contents](#)

[View Pushpin](#)

[Task Decomposition](#)

[Abstract Code](#)

[Comment on Pushpin](#)

[Task Decomposition](#)

[Abstract Code](#)

[Like/Unlike Pushpin](#)

[Task Decomposition](#)

[Abstract Code](#)

[Search for Pushpin](#)

[Task Decomposition](#)

[Abstract Code](#)

[View Popular Tags](#)

[Task Decomposition](#)

[Abstract Code](#)

[View Popular Sites](#)

[Task Decomposition](#)

[Abstract Code](#)

[View Corkboard Statistics](#)

[Task Decomposition](#)

[Abstract Code](#)

## Data Types

### USER

Attribute	Data Type	Allow Null
<u>Email</u>	String	Not Null
PIN	String	Not Null
First Name	String	Not Null
Last Name	String	Not Null

### CORKBOARD

Attribute	Data Type	Allow Null
<u>ID</u>	Integer	Not Null
Title	String	Not Null
Category	String	Not Null
Password	String	Can Be Null

### PUSHPIN

Attribute	Data Type	Allow Null
<u>ID</u>	Integer	Not Null
Image Link	String	Not Null
Title	String	Not Null
Description	String	Can Be Null
Time Added	Timestamp	Not Null
Tags	List<String>	Can Be Null

COMMENT

Attribute	Data Type	Allow Null
<u>ID</u>	Integer	Not Null
Time Added	Timestamp	Not Null
Text	String	Not Null

# Business Logic Constraints

## USER

- The email address must be in a valid format, which can be verified via regex parsing.
- The PIN must be 4 integer characters.

## CORKBOARD

- Corkboard titles need not be unique.
- Only the four most recently updated Corkboards are shown on the user interface. This will be determined by the pushpins that are applied to the corkboard.
- Corkboards can either be public or private. If it is private, a password is required for all users to view pushpins.
- Corkboard categories are limited to the following 12 options:
  - Education
  - People
  - Sports
  - Other
  - Architecture
  - Travel
  - Pets
  - Food & Drink
  - Home & Garden
  - Photography
  - Technology
  - Art
- Corkboards are empty by default.

## PUSHPIN

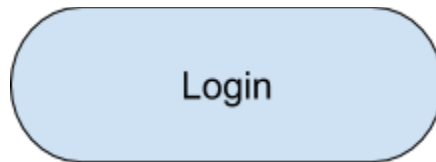
- The owner of the corkboard must be displayed along with the date and time that the PushPin was added and the title of the associated CorkBoard.
- A user can only like others' pushpins, and the "like" button should be displayed. After a user click the "like" button, it will be changed to "unlike" button.
- Description must be less than 200 characters.
- URL must be correct format, and images must be in .jpg, .png or .gif format.

## COMMENT

- Comments are sorted with the latest comment appearing on top.

## Task Decomposition & Abstract Code

### Login



### Task Decomposition

**Lock Types:** Read-Only on User

**Number of Locks:** Single

**Enabling Conditions:** None

**Frequency:** This will be a high frequency task.

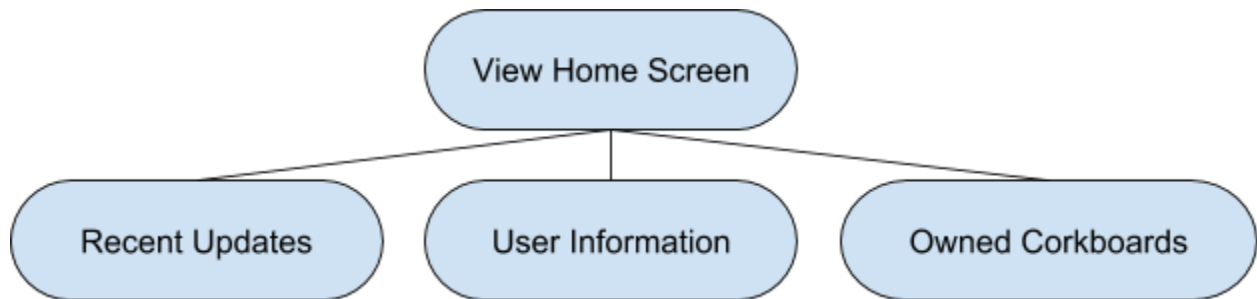
**Consistency (ACID):** Not critical, order is not critical.

**Subtasks:** Mother task is not necessary.

### Abstract Code

- User enters *e-mail address* and *PIN* into two input fields.
- If data validation for both fields is successful:
  - When **Login** button is clicked:
    - If User is found, but password is incorrect:
      - Return to the Login Form with an error message.
    - If User is not found:
      - Return to the Login Form with an error message.
    - Else:
      - Continue to the Home Page.

## View Home Screen



### Task Decomposition

**Lock Types:** Three read-only lookups (Recent Corkboard Updates, User Information & My Corkboards).

**Number of Locks:** Multiple schema constructs are necessary.

**Enabling Conditions:** All tasks are enabled by a user logging into the system.

**Frequency:** All tasks have the same frequency (high).

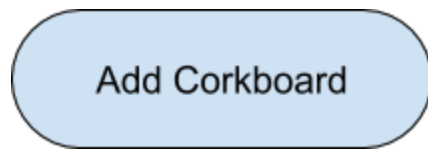
**Consistency (ACID):** Not critical, order is not critical.

**Subtasks:** Order is not necessary, but mother task is required for coordination. Subtasks can be done in parallel.

### Abstract Code

- User logs in successfully or clicks the application's **logo** to view the **Home Page**.
- Run the **View Home Screen** task: query for the User's information utilizing the current ID of the User logged into the system from the HTTP session.
  - Find the first and last name of the current User and display them on the UI.
  - Find the Corkboards that the current User **owns**, **watches**, or is **owned** by a User that the currently logged in User is **following**.
  - For each Corkboard that meets the above criteria:
    - Find the time that each Pushpin was **placed on** each Corkboard and sort the Pushpins by most recent update.
    - Sort each Corkboard by most recent Pushpin update.
    - Display the four most recently updated Corkboards.
  - Find the Corkboards that the current User **owns**.
  - Display each of the **owned** Corkboards sorted by *title*, in alphabetical order.

## Add Corkboard



### Task Decomposition

**Lock Types:** Read and write permission on User.

**Number of Locks:** Single

**Enabling Conditions:** Task is enabled by the User logging into the system.

**Frequency:** All tasks have the same frequency.

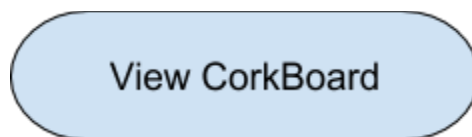
**Consistency (ACID):** Not critical, order is not critical.

**Subtasks:** There are no subtasks for this task.

### Abstract Code

- User clicks the **Add CorkBoard** button
- **Add Corkboard Form** will pop up, and User needs to:
  - Enter *title*
  - Select *category* from: Education, People, Sports, Other, Architecture, Travel, Pets, Food & Drink, Home & Garden, Photography, Technology, Art
  - Select *visibility*.
  - If *private*:
    - User must enter a *password*.
- User clicks the **Add** button.
  - Form data is validated.
  - New CorkBoard should be created with the current User set as its **owner**.

## View Corkboard



### Task Decomposition

**Lock Types:** There are multiple read-only tasks associated with viewing a corkboard.

**Number of Locks:** There are locks on multiple schemas (Corkboard, Pushpin, watching, following).



**Enabling Conditions:** Task is enabled by the user logging into the system, and having access to the Corkboard (watching, following or owning). If the board is private, a password must be entered.

**Frequency:** All tasks have the same frequency.

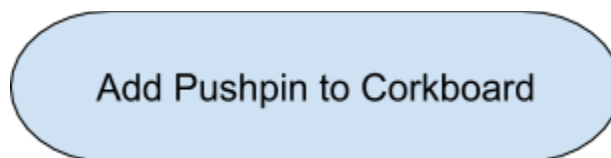
**Consistency (ACID):** Order is not critical.

**Subtasks:** Mother task is required for coordination, and subtasks can be done in parallel.

## Abstract Code

- After User runs the **View Home Screen** task, Run the **View Home Screen** task: query for more recent CorkBoard updates as well as the user's own CorkBoard(s) utilizing the current ID of the user logged into the system from the HTTP session.
  - Run the **View CorkBoard Screen** task: query for most recent CorBoards and the user's own CorkBoard(s) utilizing the current ID of the user logged into the system from the HTTP session.
    - Find the first and last name of the current User and display them on the UI.
    - If the CorkBoard does not belong to the user, display the "follow" button on the top, and "watch" button on the bottom.
    - If the CorkBoard belongs to the user, display the "add PushPin" button.
    - Run view pushpins task.

## Add Pushpin to Corkboard



## Task Decomposition

**Lock Types:** Single write task on Pushpin.

**Number of Locks:** Single lock on Pushpin schema.

**Enabling Conditions:** This task is enabled by the User logging into the system and viewing a Corkboard that they own.

**Frequency:** This will be a low frequency task.

**Consistency (ACID):** Not critical, order is not critical.

**Subtasks:** Mother task is not necessary.

## Abstract Code

- User selects **Add Pushpin** button and starts the **Add Pushpin to Corkboard** task.
  - User enters the *URL* of the image, a *description*, and multiple *tags*.
  - Validate that the description is less than 200 characters.

[Table of Contents](#)

- Validate the URL string and image file format.
- If form is valid:
  - Create the Pushpin, which is on the Corkboard.
- Else:
  - Display a validation error on the form.

## Follow/Unfollow User



Follow/Unfollow User

### Task Decomposition

**Lock Types:** Single read task and write/delete task.

**Number of Locks:** Single lock on Follow relationship schema.

**Enabling Conditions:** This task is enabled by the User logging into the system, and viewing a Pushpin or viewing a Corkboard.

**Frequency:** This will be a low frequency task.

**Consistency (ACID):** Not critical, order is not critical.

**Subtasks:** Mother task is not necessary.

### Abstract Code

- User selects the **Follow User** button and starts the **Follow User** task.
  - If User is not already **following** the other User:
    - A relationship is created for the currently logged in User and the selected User.
    - The **Follow User** button becomes “**Unfollow User**”.
  - Else:
    - Delete the existing relationship between the two Users.

## Watch/Unwatch Corkboard



Watch/Unwatch Corkboard

### Task Decomposition

**Lock Types:** Single read task and write/delete task.

**Number of Locks:** Single lock on Watch relationship schema.

**Enabling Conditions:** This task is enabled by the User logging into the system, and viewing a Corkboard.

**Frequency:** This will be a low frequency task.

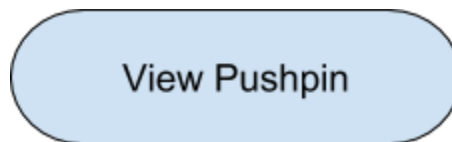
**Consistency (ACID):** Not critical, order is not critical.

**Subtasks:** Mother task is not necessary.

## Abstract Code

- User selects the **Watch Corkboard** button and starts the **Watch Corkboard** task.
  - If User is not already **watching** the Corkboard:
    - A relationship is created for the currently logged in User and the selected Corkboard.
    - The **Watch Corkboard** button becomes “**Unwatch Corkboard**”.
  - Else:
    - Delete the existing relationship between the User and the Corkboard.

## View Pushpin



## Task Decomposition

**Lock Types:** Single read task.

**Number of Locks:** Multiple schema constructs are necessary.

**Enabling Conditions:** This task is enabled by the User logging into the system, and viewing a Pushpin or searching for a Pushpin.

**Frequency:** This will be a high frequency task.

**Consistency (ACID):** Not critical, order is not critical.

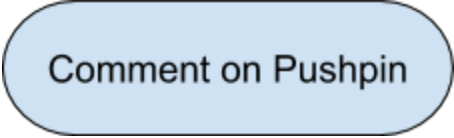
**Subtasks:** Order is not necessary, but mother task is required for coordination. Subtasks can be done in parallel..

## Abstract Code

- User selects Pushpin from Corkboard
- -OR-
- User selects Pushpin from search results
- **View Pushpin** task runs
  - **View Pushpin** screen displays, and presents the following data:
    - Owner of its parent Corkboard.
    - Date and Time Pushpin was added.

- Parent Corkboard's Title.
- The image itself
- Website address image comes from.
- Description
- List of Tags
- Screen allows Users to Like Pushpin
  - If Liked:
    - Run **Like/Unlike Pushpin** task
  - User can only Like a Pushpin once
- Screen allows Users to Unlike a Pushpin that they previously Liked
  - If Unliked:
    - Run **Like/Unlike Pushpin** task
    - User can Like the Pushpin again.
- Screen allows User to Comment on Pushpin
  - If User comments:
    - Run **Comment on Pushpin** task
  - User can comment multiple times

## Comment on Pushpin



Comment on Pushpin

### Task Decomposition

**Lock Types:** Single write task.

**Number of Locks:** Single lock on Comment schema.

**Enabling Conditions:** This task is enabled by the User logging into the system, and viewing a Pushpin that they have access to (either via watching, following, or owning).

**Frequency:** This will be a low frequency task.

**Consistency (ACID):** Not critical, order is not critical.

**Subtasks:** Mother task is not necessary.


### Abstract Code

- User selects the **Comment** button, and starts the **Comment on Pushpin** task.
  - User enters the desired *text* in an input box.
  - User selects the **Submit** button.
    - If *text* is not blank:
      - Comment *text* is applied to the Pushpin at the current time.
      - Comment is displayed on the UI.
    - Else:

[Table of Contents](#)

- Display a validation error on the UI.

## Like/Unlike Pushpin



Like/Unlike Pushpin

### Task Decomposition

**Lock Types:** Single write/delete task.

**Number of Locks:** Single lock on Like schema.

**Enabling Conditions:** This task is enabled by the User logging into the system, and viewing a Pushpin that they have access to (either via watching, following, or owning).

**Frequency:** This will be a medium frequency task.

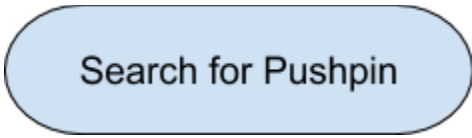
**Consistency (ACID):** Not critical, order is not critical.

**Subtasks:** Mother task is not necessary.

### Abstract Code

- User selects the **Like** button, and starts the **Like Pushpin** task.
  - Relation is created between the User ID and the Pushpin ID, representing that the current User likes the currently viewed Pushpin.
  - The relationship is shown on the UI after the transaction is complete.

## Search for Pushpin



Search for Pushpin

### Task Decomposition

**Lock Types:** Read-Only on User

**Number of Locks:** Single

**Enabling Conditions:** This task is enabled by the User logging into the system.

**Frequency:** This will be a medium frequency task

**Consistency (ACID):** Not critical, order is not critical.

**Subtasks:** Mother task is not necessary.

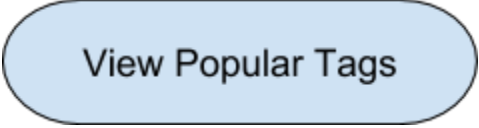
### Abstract Code

- User enter a *search term* in the search textbox.

[Table of Contents](#)

- -OR-
- User selects a **Popular Tag**, which is then the *search term*.
- **Search for Pushpin** task runs:
  - If the *search term* is contained in either the:
    - Description,
    - All of the Pushpin's Tags, or
    - The Category of the Pushpin's parent Corkboard
  - Then display the following information from the Pushpin:
    - Description (which is also a link to **View Pushpin** screen)
    - Parent Corkboard
    - Corkboard Owner
  - The results are sorted alphabetically by Description
  - Private Pushpins never show in results.

## View Popular Tags



View Popular Tags

## Task Decomposition

**Lock Types:** Read-Only on User

**Number of Locks:** Single

**Enabling Conditions:** This task is enabled by the User logging into the system.

**Frequency:** This will be a low frequency task

**Consistency (ACID):** Not critical, order is not critical.

**Subtasks:** Mother task is not necessary.

## Abstract Code

- User selects the **Popular Tags** button.
- **View Popular Tags** task runs.
  - **View Popular Tags** screen displays
  - Fetch the most used unique Tags on all Pushpins.
    - If Pushpin has the same Tag twice:
      - Only count one instance.
    - Order Tags descending by Pushpin count:
    - If Tag is clicked:
      - Perform **Search For Pushpin** task.

## View Popular Sites



### Task Decomposition

**Lock Types:** There is one read-only lookup for this task.

**Number of Locks:** Only one schema construct is necessary.

**Enabling Conditions:** This task is enabled by the User logging into the system.

**Frequency:** This will be a low frequency task.

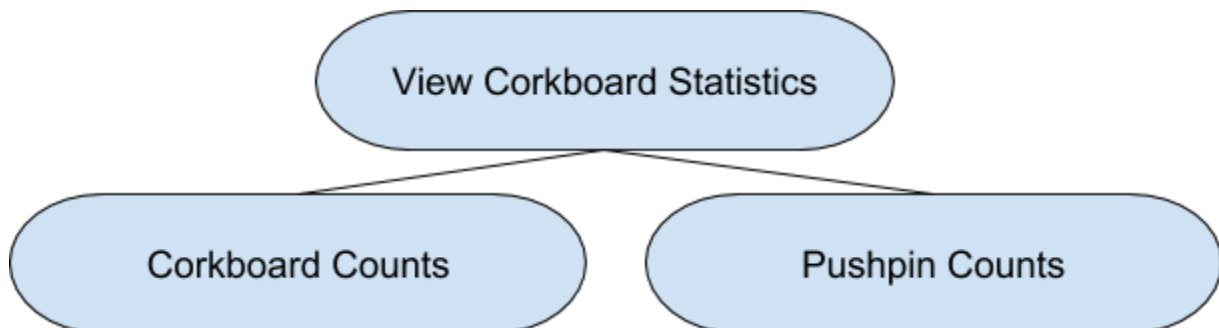
**Consistency (ACID):** Not critical, order is not critical.

**Subtasks:** This task does not need to be decomposed.

### Abstract Code

- Run the **View Popular Sites** task.
  - Fetch the most common URLs (and their counts) that appear on Pushpins.
  - Display the information on the UI.

## View Corkboard Statistics



### Task Decomposition

**Lock Types:** There are two read-only lookups (counts on Corkboards and Pushpins).

**Number of Locks:** Multiple schema constructs are necessary.

**Enabling Conditions:** All tasks are enabled by a user logging into the system.

**Frequency:** All tasks have the same frequency.

**Consistency (ACID):** Not critical, order is not critical.

**Subtasks:** Order is not necessary, but mother task is required for coordination. Subtasks can be done in parallel.

## Abstract Code

- Run the **View Corkboard Statistics** task.
  - For each User in the system:
    - Display the total number of public Corkboards that each User **owns**.
    - Display the total number of private Corkboards that each User **owns**.
    - Display the total number of Pushpins that are on public Corkboards **owned** by each User.
    - Display the total number of Pushpins that are on private Corkboards **owned** by each User.