

Patchwork

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Software Requirements Specification

1. The Concept of Operations (ConOps)

Anna DeBarro & Inna Gruneva, 1/16/2026

Our website, Patchwork, aims to bridge the gap between online second-hand clothing sales and developing one's personal style. The idea is to create a digital space where users can share images that encapsulate their personal style, and "patch" content from other users to their board. Patches can simply be style inspiration photos, but can also be real listings for clothes that users can purchase from other users. The goal is that the combination of inspiration and real item listings will lead to a more personalized second-hand shopping experience and a unique space for developing one's personal style.

1.1 Current System or Situation

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Currently, the closest online platform to our idea is Depop. Depop is a second-hand reselling app with features such as followers, posting, creating a description and using hashtags. While there are a lot of cool sellers on Depop, it is difficult to find items when you are looking for something specific. We have found that the interface is difficult to use, and the search methods take a long time to sort through to find items you may like.

1.2 Justification for a New System

Anna DeBarro & Inna Gruneva, 1/16/2026

Patchwork is inspired by a few existing social media websites or apps, mainly Pinterest, Depop, and Instagram. Patchwork aims to fall between Depop and Pinterest as a place for both inspiration and purchasing or posting unique clothing items. We have found that it is difficult to find what you're really looking for on Depop and believe a product that combines the personalization of each user on Pinterest with Depop would lead to more success in buying and selling items. Additionally, we are inspired by the Instagram's user and the separation of its different features.

1.3 Operational Features of the Proposed System

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Patchwork will function as a social media app with the option to list or purchase clothing items. Its main operational features will be posting one's "patches", adding them to your

personal clothing board. Much like Pinterest, we hope users will patch other users' posts freely to build boards that truly represent their style. Searching will be optimized by harnessing the user's board, so that items suggested in search are in alignment with their personal style. Different boards will have different suggestions. Users will have a home feed that includes both inspirational content and suggested listed items they can patch to their boards. They will also have tabs for just inspiration or just listed items. The same concepts will be applied to their own profile pages.

1.4 User Classes

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Our target users are people interested in fashion, trends, and developing their personal style. They are people who enjoy second hand or thrifted items looking to find unique pieces. Most users will likely be 16-30 years old.

1.5 Modes of Operation

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Most users of our product will be general users on the social media side, as described above. However, to report issues with the website, or to speak to a representative about being hacked or suspended, we will have an administrative account type that will handle these needs.

1.6 Operational Scenarios (Use Cases)

Anna DeBarro, Emily Mayer, & Inna Gruneva, 2/6/2026

Use Case: User creates an account

Brief description: the user wants to sign up for Patchwork with their personal info

Actors: A user.

Preconditions:

1. User does not have an existing account with the email address they would like to use.
2. User is willing to provide a username and provide a password with reasonable security.

Steps to Complete the Task:

1. The user goes to patchwork.com and clicks "login"
2. They do not have an account, so they click "create an account" below login field
3. They are provided a series of fields to create a username (if username is taken, user will be prompted to select a different one), enter their email address, and create a password with at least 8 characters, one uppercase, one lowercase, one number or symbol.
4. Account will be created, and user will select basic interests to guide their home page development.

Use Case: User creates a listing

Brief description: the user wants to sell a clothing item on their page

Actors: A user.

Preconditions:

- The user has an account created and an item to sell. They have information about the item (size, style, item type, color, material, brand, and images of the item).
- The user has inputted billing information into their account

Steps to Complete the Task:

1. Home feed will always have a “plus” in the corner. User clicks on the plus.
 2. User selects from “post” and “listing” (selects listing)
 3. User prompted to upload pictures of the listing (10 max)
 4. User provides a description of the product
 5. They are able to fill in the size, color, material, product type, gender, brand
- They input the price of the item
 - 6. User patches the item

Use case: User creates a post

Brief description: the user wants to create an inspiration image, i.e., a post

Actors: A user.

Preconditions:

1. They have an account and an image they want to patch to their board. If they want, they have a description or caption for the image

Steps to Complete the Task:

1. Home feed will always have a “plus” in the corner. User clicks on the plus.
2. User selects from “post” and “listing” (selects post)
3. User prompted to upload pictures of the post (10 max)
4. The user is given an option to include a caption
5. They select patch

Use case: User purchases an item

Brief description: a user wants to purchase an item from another user.

Actors: the user

Steps to Complete the Task:

1. The user selects the item they would like to purchase
2. They click 'Buy'
3. If no card information has been inputted for the user, they are prompted to do so
4. If there is existing payment information, the user is asked to verify it.
5. The user reviews the purchase and clicks "Confirm Purchase"
6. Buyer and seller are connected via direct message to arrange pickup or shipping independently

2. Specific Requirements

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1. Content Creation
 - a. Users are able to upload and share images
 - i. Users can upload up to 10 images per post or listing
 - ii. Supports JPG, PNG, and HEIC formats
 - i. HEIC files will be converted to JPG/PNG on backend for broader browser compatibility
 - iii. The system will store uploaded images in a persistent database
2. Listings
 - a. Users are able to create listings for clothing items
 - i. Listings include size, color, item type, brand, condition, price
 - ii. The system will prevent posting without all the required fields
 - b. Users shall be able to purchase listings from other users
 - i. Listings will be marked as “sold” once they have been purchased
 - ii. Buyers and sellers coordinate delivery arrangements independently via direct messaging
3. Home Feed
 - a. The system will provide a personalized home feed
 - b. The home feed will contain both inspiration posts and listings
 - c. The user will be able to filter the home feed by post only or listing only
 - d. Home feed content shall be ranked based on user interactions like patches, follows, searches
4. Boards and Patching
 - a. The user is able to patch posts and listings to their personal board
 - b. Patched content will still be linked to the original creator
 - c. Users have the ability to remove items from their board
5. Social Interactions
 - a. Users can follow and unfollow other users
 - b. Users can comment on other users posts and listings
 - c. The system shall provide direct messaging between users
6. Search and AI
 - a. The system will provide keyword-based search for posts and listings
 - b. Users shall be able to search for listings only, inspiration only, or both
 - c. The system should use AI assisted tagging to categorize items

2.1 External Interfaces (Inputs and Outputs)

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Interface: User Registration Form

1. Name: User Registration Input
2. Purpose: Collect new user information to create an account
3. Source: web browser

4. Valid ranges:
 - a. Email: valid email format, max 255 char
 - b. Username: 3-30 characters, alphanumeric
 - c. Password: 8-64 characters, must contain uppercase, lowercase, number, symbol
5. Units: N/A
6. Data format: HTTP POST, JSON

Interface: Listing Submission

1. Name: Listing Input
2. Purpose: creates a new clothing listing
3. Source: Authenticated user
4. Valid ranges:
 - a. Price: \$1 - \$10,000
 - b. Images: 1 – 10 files
5. Units: USD
6. Data format: multipart form data for HTTP req.

Interface: Payment Processing

1. Name: API Response
2. Purpose: confirms purchase transactions
3. Source (& destination): Stripe or PayPal (external payment processor)
4. Valid ranges: transaction status success or failure
5. Units: USD
6. Data format: JSON

2.2 Functions

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1. Account Creation Function
 - a. Validates email uniqueness and password strength
 - b. Stores encrypted credentials
 - c. Returns confirmation or error message
2. Post/Listing Creation Function
 - a. Validates image count and metadata completeness
 - b. Saves content and associates it with user profile
 - c. Returns success confirmation
3. Search Function
 - a. Accepts keyword and filter inputs
 - b. Queries indexed content
 - c. Returns ranked results
4. Messaging Function
 - a. Validates recipient existence

- b. Stores messages securely
 - c. Pushes messages to recipient client
- 5. Payment Processing Function
 - a. Integrates with Stripe or PayPal API
 - b. Validates payment information
 - c. Processes transaction and returns success or failure status
 - d. Transfers funds to seller account minus platform fees (if applicable)

2.3 Usability Requirements

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1. New users shall be able to create an account and post content within 5 minutes.
2. Basic navigation (Home, Search, Profile, Create) shall all be accessible within one click.
3. The system is visually appealing and self-explanatory (can be used without much instruction or guidance).
4. If possible, user testing is conducted and at least 80% of test users report satisfaction of at least 4/5 in usability testing surveys.

2.4 Performance Requirements

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1. At least 95% of feed load requests shall complete within 1.5 seconds
2. Image uploads shall complete within 3 seconds
3. Direct messages shall be delivered within 500 milliseconds

2.5 Software System Attributes

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1. Security
 - a. All user passwords shall be stored using cryptographic hashing
 - b. The system shall use authentication tokens for session management
2. Privacy
 - a. User data shall not be shared with third parties without consent
 - b. Users shall be able to delete their accounts and associated data
3. Reliability
 - a. The system shall maintain 99% uptime excluding scheduled maintenance
4. Maintainability
 - a. Code shall follow modular design principles
 - b. Automated tests shall cover critical user flows

4. References

Sethi, R. (2023). *Software engineering: Basic principles and best practices*. Cambridge University Press.

5. Acknowledgments

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