

Requirements Document

Tool Shed

REVISION HISTORY

Revision #	Author	Revision Date	Comments
0.0	Justin Gallagher	February 1, 2023	Initiated
0.1	Justin Gallagher	February 3, 2023	Added use cases and descriptions
0.2	Kat Tejada	February 3, 2023	Added functional requirements & features and system block diagram
0.3	Destinee Sheung	February 3, 2023	Made some revisions to the Use cases and document overview, added and made some revisions to the System Overview
0.4	Cameron Metzinger	February 3, 2023	Added some nonfunctional requirements
0.5	Aaron Thomas	February 4, 2023	Added some nonfunctional requirements
0.6	Justin Gallagher, Cameron Metzinger, Kat Tejada	February 5, 2023	Added some functional requirements

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Document Overview

The Requirements Specification document defines the features and requirements for Tool Shed.

- System Overview
- General Requirements
- Features and Requirements
- Use Cases

System Overview

Project Abstract

Tool Shed is a web-based application that will allow its users to share, buy, sell, and trade tools of all kinds. Once users are registered with Tool Shed accounts, they can list their own tools and equipment available to the community. Users will also be able to see what tools are available from members of the surrounding community. This web application is meant to be a low-cost solution for high-cost tools making them available at a fraction of the cost set by the owner.

Users will begin by registering online accounts using the Create Account option. After accounts are created, the user will manage tools they own and want to make available to the public by setting a daily rate and availability. Users will also be able to search the local community using keywords like, “Table saw,” or “Miter Saw,” and view low cost locally owned tools available. To help with their search, the user can filter their search results by type of tool and by mile radius. If the tool is unavailable at the time, the user can make a request to receive a notification when the tool is available. Once a tool is selected for either buy or rent, the users will be able to make a request with the owner of the tool and agree on a date and price. Users will be prompted to return the tool within an agreed window set by both users.

For users who are looking to sell or lend their tools out to other users, they can select to list their tools. Afterwards, they are prompted to fill out information about their tools and upload images of them. The user receives a notification once another user requests their tool.

Conceptual Design

The application will be programmed using JavaScript, HTML and hosted online via web application allowing full functionality on multiple devices. The application will be connected to a database allowing simple SQL commands to add/retrieve data.

Background

With many employees working from home and setting up home offices, Do It Yourself (DIY) projects are at an all-time high. With internet resources and basic knowledge, you can get a significant amount of work done without hiring an expensive professional to complete the job. The alternative to purchasing an expensive tool for a few days of use could be renting the tool from someone in the local community that has the tool available and not in use. Users will profit from what is sitting in their tool shed while the items are not being used. This will help keep the cost low for DIY projects.

System Block Diagram

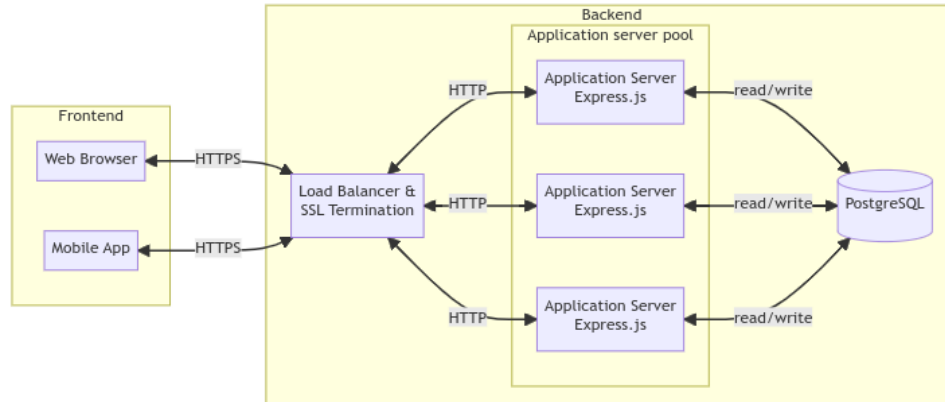


Figure 1. High level technical design of the Tool Shed Website.

The application is a basic database-driven web application. Frontend clients (web browsers, mobile apps, etc) send HTTPS requests to a load balancer (which terminates SSL/TLS) and forwards the request to a pool of application servers. Each app server uses the database to fulfill requests, which get passed back through the load balancer to the client. This architecture allows for automatic scaling (out) to match the traffic the web application experiences to the number of servers serving the request.

Figure 1 also shows that the HTTPS requests that come into the backend get SSL terminated. This is so that the application server can be designed with fewer dev-ops things in mind. Using the load balancer as a singular entry/exit point for the backend also frees up developers from having to worry about hardening their web application against attacks on the open internet.

General Requirements

- ⊄ Internet Browser with active connection.

Features and Requirements

Functional Requirements

- ⊄ Tool Shed will require registration using a login system, this will be with a username and password or via a google/Facebook account
 - ⊄ Login security will use a login system like Okta's auth0 login security
<https://auth0.com/login-security>
 - Auth0 can handle bot detection, brute force attacks, and other security related issues without the need of a credit card on the developer's part

- This component implements best practices for mobile logins and is easy to set up to ensure security is at the forefront of the website
- ✧ The home page will appear first when the user signs in and is also located in the navigation bar.
 - ✧ Home page contains the notification button where the user see's any updates on listings they opted to be notified for
 - ✧ Home page contains plus icon for the user to upload a new listing of a tool
 - ✧ Home page contains a picture in the right-hand corner of the user's profile which has a drop-down menu for settings, logout option, and view profile
 - ✧ The home page mainly consists of a list of tools available to rent within the default parameters. These parameters can be changed, and a map will reflect where the available tools are located
- ✧ The plus icon on the home page of the app allows users to list a new tool
 - ✧ Details associated with the listing that must be completed before posting live to the public are... description, picture (at least 1), general location (zip code)
 - ✧ Details associated with the listing that are optional to add are... monetary rate for tool rental, monetary value for tool purchase, more than 1 picture
- ✧ The home page of our app contains a list of tools nearby to rent and an interactive map to show associated locations of the tools
 - ✧ Pins represents an available tool to rent or purchase
 - ✧ Users will be able to move the map around and zoom in and out to view more pins
 - ✧ Users will be able to adjust the search radius manually by entering in values to parameters
 - ✧ The crosshairs button redirects the user to the user's location on the map
 - ✧ When a user clicks on a pin that listing will pop up larger on the screen to indicate that is the tool in that location
 - ✧ The search/filter function applies to the map and list of tools to rent/purchase by different criteria
 - Search filters include: within # miles, availability status, type of job, rating, and time posted
- ✧ By clicking the user display avatar, a menu of properties/settings will be accessible.
 - ✧ By clicking account settings, users can change:
 - Personal details
 - Payment information
 - Privacy settings
 - Delete Account
- ✧ Homepage will contain sidebar on the left with the following menus
 - ✧ Home
 - ✧ Saved Listings
 - ✧ Your Listings
- ✧ If no listings are found that meet the filter criteria, the home page of the Tool Shed contains suggestions of other tools nearby

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- ⊘ The user will only receive tool recommendations if there is no tool that fits the filters for a particular search
 - ⊘ The user will receive recommended tools that are similar to the filter criteria but may not 100% match

 - ⊘ The “Saved Listings” page will be accessible through the navigation bar after the user signs in and is also located in the navigation bar.
 - ⊘ Saved Listings page will contain two sections.
 - Saved Sellers/Sheds
 - Saved Listings
 - ⊘ Saved Listings Seller/Sheds section will contain details for any Seller/Shed that the log in user has selected to be a favorite. Details will include (Name, Zip Code, Number of tools listed) Clicking on this section will bring the user to the seller's Tool Shed.
 - ⊘ Saved Listings page will also display specific listings that the log in user has chosen to select as favorites. Details will include (Tool Name, Type, Description, Cost, Availability, Owner)

 - ⊘ The “Your Listings” page will be accessible through the navigation bar after the user signs in and is also located in the navigation bar.
 - ⊘ Your Listings page will contain two sections
 - Your Listings (Active)
 - Your Listings (Inactive)
 - ⊘ Your Listings Active will have details regarding your tools available for rent/purchase. Details will include (Tool Name, Type, Description, Cost, Availability, Owner)
 - Listing details will show either available, or the location of the tool if the tool is currently in use by another registered user
 - ⊘ Your Listings Inactive will have similar details regarding your tools, but will be highlighted with a red background. Details will include (Tool Name, Type, Description, Cost, Availability, Owner)

 - ⊘ Tool Shed allows users to rate tools (or users) with a star system ranging from 1 to 5 which will become available once a tool has been returned to the owner or a tool has been sold.
 - ⊘ A rating of 1 star would imply the reviewer of the tool (or user) did not have a positive experience and would not recommend it to a friend
 - ⊘ A rating of 5 stars would imply the reviewer of the tool (or user) did have a positive experience and would recommend the tool (or user) to a friend

Nonfunctional Requirements

- ⊄ Tool-Shed will have a simple, easy to understand user-interface throughout.
 - Multiple listings will be contained per row/column that are interactive.
 - Clicking on each listing from this initial page will take you to a more detailed view of the specific listing.
 - From this more detailed listing, users will be shown a pin on a map letting them know the general vicinity of the tool.
 - The listings on the initial search menu will provide only necessary information to determine if it may be a good candidate for purchase/rent.
 - In the case of multiple images, a carousel feature will cycle through them.
- ⊄ Rendering only a specific number of listings at a time will allow for better performance.
- ⊄ Users must have verifiable identification.
- ⊄ Users can only have one account.
- ⊄ User login information will be secure via Okta's auth0 login security.
- ⊄ Users will have access to contact information of other users.
- ⊄ The Video Library will be moderated so that there will only be relevant videos.
- ⊄ User Reviews will be moderated to prevent actions such as review bombing.
- ⊄ Will use a PostgreSQL server to store information.
- ⊄ The resources tab will be updated and kept relevant as moderators keep track of new useful resources that become available in the area.

Use Cases

Use Case #1

The user wants to search their local neighborhood for a hedge trimmer. They would like to get the job done today and do not have the budget to purchase a brand-new one.

1. The user navigates to (URL:TBD) and enters their username and password.
2. The user clicks the (LOGIN) button.
3. The user clicks on the (button: RENT_TOOL) and completes the following fields.
 - a. Zip Code: #####
 - b. Search Radius: 15 miles
4. The user clicks the (button: SEARCH_TOOL) which will complete the request and execute the database query.
5. The user is presented with 3 search results
 - a. AVAILABLE: *Gas Hedge Trimmer (NAME) (CONTACT)*
 - b. AVAILABLE: *Electric (Battery) Hedge Trimmer (NAME) (CONTACT)*
 - c. AVAILABLE: *Electric (Wireless) Hedge Trimmer (NAME) (CONTACT)*
6. The user clicks option 3 and clicks the (button: CONTACT) and is presented with the contact information for *Electric (Wireless) Hedge Trimmer*.
7. The user contacts the person responsible for *Electric (Wireless) Hedge Trimmer*.
8. The user clicks the (button: LOG_OFF) and closes the website.

Use Case #2

A homeowner wants to list a tool to sell it as they no longer need it anymore and for other users to be able to purchase it.

1. The user enters the URL.
2. The user enters their username and password.
3. The user clicks on the (button: LOGIN).
4. The user is brought to the homepage.
5. The user clicks on the (button: LIST_TOOL) and completes the following fields.
 - a. Name of tool
 - b. Zip Code: #####
 - c. Type of tool (Electric, Battery, Wireless, etc.)
 - d. Type of Listing (Sell or For Rent)
6. The user clicks on the (button: INSERT_IMAGE) to upload an image of the tool.
7. The user then clicks the (button: SUBMIT) to add tool to a listing.
8. The user sees a list of tools being sold after clicking submit.
9. The user can click the (button: LIST_TOOL) to list another tool if they want to.
10. The user clicks on the (button: LOG_OFF) to log off account.
11. The user exits the website.

Use Case #3

The user would like to rent out tools that they are not currently using to earn some extra money.

1. The user navigates to (URL:TBD) and enters their username and password followed by clicking the (button: LOGIN).
2. The user clicks on the (button: LIST_TOOL) and completes the following fields.
 - a. Name of Tool
 - b. Zip Code: #####
 - c. Type of Tool (Electric, Battery, Wireless, etc.)
 - d. Type of Listing (For Rent)
 - e. Price (Price per hour/day/week)
3. The user clicks on the (button: INSERT_IMAGE) to upload images of the tool.
4. The user clicks the (button: SUBMIT) to add tool to the list of tools for rent.
5. The user is brought to the local listings menu once submission is successful.
6. The user clicks on the (button: LIST_TOOL) to repeat the process for as many tools as they would like to list for rent.
7. The user can then close the website or click the (button: LOG_OFF).

Use Case #4

A homeowner has an unexpected afternoon off from work and wants to see what tools are available now to see what projects they can complete around the house.

1. The homeowner visits the base URL of the website (apex hostname and root path)
2. If the homeowner isn't logged in, they are presented with controls to do so
3. The homeowner is brought to their user homescreen/dashboard
4. The homeowner clicks the button "Nearby Now", which takes them to a screen where they can browse the tools that are available to borrow and are within a search radius that is adjustable via scrubber bar control.
5. The homeowner selects a tool and is presented with contact information for the owner of the tool.
6. The homeowner can optionally close the website or log out afterwards.

Use Case #5

As a homeowner, I want to be notified when a nearby Air Blower will be available to be rented.

1. The user navigates to (URL:TBD) and enters their username and password followed by clicking the (button: LOGIN).
2. The user enters the name of the tool (Air Blower) in the search bar.
3. The user enters the filters to narrow search results
 - a. Zip code #####
 - b. Search Radius: 15 miles
4. The user clicks (button: SEARCH_TOOL) which will complete the request and execute the database query.
5. The user is presented with this result
 - a. There are no Air Blowers within 15 miles
 - b. Show rented out tools
6. The user clicks (Show Rented Out Tools) which will show if that tool is being rented out in the area.
7. The user is presented with the following results
 - a. *Gas Air Blower (NAME) (CONTACT)*
 - b. *Electric (Battery) Air Blower (NAME) (CONTACT)*
 - c. *Electric (Wireless) Air Blower (NAME) (CONTACT)*
8. The user clicks the desired item and receives a prompt.
 - a. You will be notified when this item is listed.
9. The homeowner can close the website or click (button: LOG_OFF).

Use Case #6

As someone who uses this site to rent tools to make extra money, the user wants to be able to remove a tool listing to make sure it is available for their personal use.

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1. The user navigates to (URL:TBD) and enters their username and password followed by clicking the 'Login' button.
 2. The user clicks on the (button: ACTIVE_LISTINGS) and is presented with their active listings
 - a. AVAILABLE: *Gas Hedge Trimmer (NAME) (CONTACT) (EDIT)*
 - b. AVAILABLE: *Circular Saw (NAME) (CONTACT) (EDIT)*
 - c. AVAILABLE: *20-Gal Electric Air Compressor (NAME) (CONTACT) (EDIT)*
 3. The user clicks on the (button: EDIT) associated with the listing they would like to change
 4. The user is presented with the following choices
 - a. Header: AVAILABLE: *20-Gal Electric Air Compressor (NAME) (CONTACT)*
 - i. Change Availability (button: AVAILABLE) (button: NOT_AVAILABLE)
 - ii. Change Contact Information (button: CHANGE_CONTACT_INFO)
 - iii. Change Description (button: MODIFY_DESCRIPTION)
 5. The user will select the (button: NOT_AVAILABLE) to remove the listing from the public eye. Now this tool cannot be rented, and it is only for personal use by the original lister
 6. If the user wishes to list the same tool again, they click the Change Availability (button: AVAILABLE) to re-list the tool