WEB ROUTING

Evaluation Manual

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# 1. Overview

This document addresses issues and potential improvements to the system. Both the routing and the auctioning components of the system are designed to be scalable and support development of further features. Some ideas for further features are included, as well as technical issues that were unable to be fixed within the timeframe.

# 2. Issues

1. **Multiple Users logged in on the same browser**: Users cannot login to two separate accounts on the same browser.
2. **Screen scaling:** The screen must be able to adjust to the size of the device using the application.
3. **Navigation dropdown**: The current dropdowns on the navigation panel will obscure the buttons underneath.
4. **Cannot upload users:** Need to implement uploading users from excel spreadsheet.
5. **Shadow Admin to see current logged in users:** Shadow Admin lacks the ability to see what users are currently logged into the application.

1. **Freight rate table expansion:** Needs to take in weight, volume, and other potential parameters.
2. **Forgot password:** feature crashes if an email that is not tied to an account is entered.

# 3. Fixing Issues

1. This issue with logging multiple different users into different tabs lies in how Spring manages sessions. It ties a session to a browser cookie, called JSESSIONID, and that cookie is shared between all tabs of the browser. A workaround for this would be to store some unique token in window.sessionStorage in HTML5 on the client end with JavaScript and passing this unique token to the server with every request. Then, some intercept function would have to check every incoming post request and indicate which user is logged in to the server, thus delivering the right content to their tab. Google Mail uses a system like this and appends the token physically into the URL body.
2. A fix for this has been implemented in the Navigation bar and header. This involves using the @media tag in CSS to adjust the CSS for different screen sizing. This issue is that the CSS for every element that needs to be resized will need to be rewritten entirely, with multiple sets of CSS for different screen sizes. It is also difficult to test this element of the program without having access to many different screens at easy disposal. If this were fixed in the future it could lead towards an eventual mobile version of the program, but it would require a full CSS rewrite from the ground up.
3. Instead of dropdown submenu, implement an accordion menu.
4. This could be done using the existing excel upload. However, it would need the user to securely set their own password after uploading. Not be able to store plain text passwords in the excel file. Users would need to be prompted to change their password upon first login.
5. Use the object principle from the SecurityContextHolder object in Springboot to grab a list of active user's session ids. This would also require the UserDetailsService to implement methods for handling the session IDs and mapping them to the correct usernames.
6. The freight rate table currently considers distance and can also set prices for different carriers. It should also be able to modify prices based on distance. This can be done by modifying the formula for calculating the Shipment price from the Freight Rate Table.
7. The crash is due to a null reference error in userServiceImpl.java. The crash would have to be caught (in a try catch) and a message displayed to the user.

# *4.* Improvements/future work

1. Expanding the freight rate system to incorporate more parameters beyond the current distance and carrier ones. Weight, volume, and commodity class can be considered.
2. Creating a system for having accounts created by the administrator (whether uploaded or added manually) set up their password on first login. It would be far more secure to have externally created accounts set their own.
3. password on first login than trusting that responsibility to the admin.
4. The routing system currently can display the route of a vehicle as it picks up a shipment and drops it off. This can be expanded to show more details about the route, as well as showing the route of a vehicle with multiple shipments. The current system can already calculate an optimal vehicle for each shipment based on distance, this system could be expanded into calculating an optimal route from shipment to shipment for all the shipments in a vehicle.
5. A system could be developed to get around the limitations of Springboot session manager to allow different users to log into different tabs. This would either involve modifying the URL body with a unique token stored on a tab-by-tab basis in the client or appending said token into the request header for all requests, and then having a system on the server-side handing out the appropriate pages to each tab based on which token was received.
6. The CSS of the application can be redesigned to be scalable, so that it would be more feasible to have everything scaled to different screen sizes. This could also be used to build a mobile version of the application. A mobile version would be helpful for drivers in the field calculating their routes.
7. Expand the Logging system: Currently Shadow Admins can only see the current log file that is being written to. Log files get archived after it hits 1GB and there is no system to reopen them for browsing. You may want to consider moving away from the log file to a SQL table for consistency with all of the other entities across the application.