

Our project has eight level of components. The top level is signup; only if user signup for an account, the user can continue to use the application. There is the component reset password that lies between signup and login. The next level is login; all actions below can only be done after the user login. The following level includes update account, logout, create ride request, create ride offer. Under create ride request are components is search ride request and view ride request, followed by components cancel ride request and update ride request in the next level. Under

create ride offer is search ride offer and view ride offer, followed by components cancel ride offer and update ride offer in the next level. Under search ride request is component accept ride request; only after searching, the user can see the list of possible ride request he/she can accept. Under search ride offer is component join ride offer; only after searching, the user can see the list of possible ride offer he/she can join. The bottom level are components cancel accepted request which depends on accept ride request, and update joined offer and cancel joined offer which depend on join ride offer. Component confirm pickup depends on both accept ride request and join ride offer. View transaction is the lowest level which depends on accepted ride request, joined ride offer, cancel or update any and confirm pickup.

For each component mentioned above is actually a unit consisting of three internal components that include UI, backend logic and the function connecting to database. Therefore in the following test, we will do incremental testing for the connection among the three internal components of each unit. Then gradually adding the unit following the above tree diagram for incremental testing.

1.2 Form of Incremental Testing

When developing our web application, we started from the top modules to the ones below following the above tree. Therefore the modules in the bottom are still under development and cannot be used at this time of testing. So we will use the top-down approach.

2 Incremental and Regression Testing

Module: Accept Ride Request (Accept Ride Request UI, Accept Ride Request backend logic, Added Accepted Ride Request to DB)

Incremental Testing

Defect No.	Description	Severity	How to Correct
1.	When frontend send a view request request to backend, backend response sends list of ride request without users accepted that request.	3	Got list of accepted user of the ride request from database and send back to frontend.
2.	System failed to distinguish if the user is authorized to cancel a acceptedRideRequest	1	Reconstructed part of the cancelAcceptedRideRequest to check if the accepted request is made by the user.
3.	DB failed to return error code when trying to remove a record specified by invalid parameters from database	1	Since SQL DELETE function won't consider delete 0 rows as error, we added in a variable to count the rows

			deleted to determine if it successfully delete rows.
4.	DB failed to insert new record to the database for acceptedRideRequest	1	Fixed syntax error in DB query
5.	DB failed to insert new record to the database for joinedRideOffer	1	Fixed syntax error in DB query

Regression Testing

Defect No.	Description	Severity	How to Correct
1	After add the list of accepted user to each ride request, the frontend get an empty ride request list. The backend should not assume that there is always someone accepted the request when constructing the list	1	In database query of selecting ride request, use left join instead of join.

Module: Join offer (Join Offer UI, Join Offer backend logic, Add joined offer to DB)

Incremental Testing

Defect No.	Description	Severity	How to Correct
1.	When user is joining offers, the system only checks if the offer exists instead of checking if it is still available or not	1	Added constraints to check offer status

Regression Testing

Defect No.	Description	Severity	How to Correct
1.	After joining an offer, the status of the ride in the frontend appears to be cancelled.	3	Fixed the bug by changing interpreting the status of the ride properly.

Module: View Request (View Request UI, View Request backend logic, Select request from DB)

Incremental Testing

Defect No.	Description	Severity	How to Correct
1.	When frontend send a view request request to backend, backend response sends list of ride request without users accepted that request.	3	Got list of accepted user of the ride request from database and send back to frontend.
2.	Frontend is sending the wrong request to the server.	2	Correct the data that is being sent to the backend.
3	Travel time and date and time is displayed in a non readable fashion.	3	Changed the travel time and date and time to display in a readable fashion.

Regression Testing (No defects found after above fixes)

Defect No.	Description	Severity	How to Correct
1			

Module: View offer (View offer UI, View offer backend logic, Select view offer from DB)

Incremental Testing

Defect No.	Description	Severity	How to Correct
1	View offer modal extended very long when there are too many passengers	3	Set a fix height to the modal and set overflow-y
2	Carousel kept looping infinitely	2	Set data-wrap and data-interval to false
3	Passengers list in modal is not generating properly, it only shows the passengers that belongs to the same offerid	1	Assigned dynamic id to the list
4	Carousel will not reset when exiting from the modal, when open up a	2	Set the starting page everytime the page reload:

	different modal, it will start from the page index where user left in the previous modal		<code>\$("#carouselExampleIndicators").carousel(0)</code>
5	Unable to retrieve data: offeruserstatus correctly from the server, it shows data undefined	1	Changed the data type from int to integer array
6	Travel time and date and time is displayed in a non readable fashion.	3	Changed the travel time and date and time to display in a readable fashion.

Regression Testing

Defect No.	Description	Severity	How to Correct
1	After assigning dynamic id, it shows all of the passengers from every other order id in all modal	1	Added a different of id in the html of the list: "data-joinedby = #"
2	Javascript does not recognize offeruserstatus as an array even after changing the data type	1	Added offeruserstatus array object into the offerlist
3	offeruserstatus doesn't show data when page reload but it appears on console.log	2	Corrected the generated html by wrapping the text in <code><i></i></code> and set the class to value

Module: Confirm Join Offer Pickup (UI, backend logic, DB)

Incremental Testing

Defect No.	Description	Severity	How to Correct
1.	When driver confirm the pickup using the join offer code the passenger received from UI, the backend sends a wrong code response to frontend.	1	Fixed the database query of addJoinedOfferPickup to store the code the passenger generated in the passenger field instead of the driver field.
2.	Frontend did not show the right code for pickup.	1	Fix by retrieving the right data from the backend.
3.	Frontend could not receive success	2	Fix by making sure frontend is

	response from the backend.		waiting until backend to send response.
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Regression Testing (No defects found after above fixes)

Defect No.	Description	Severity	How to Correct

Module: View Transaction (UI, backend logic, DB)

Incremental Testing

Defect No.	Description	Severity	How to Correct
1.	Backend sends a transaction list to frontend that includes pairwise entries like A paid B and B get paid from A which is confusing.	3	Removed the pairwise entries when retrieving the list from database
2	Date and time is displayed in a non readable fashion.	3	Changed the date and time to display in a readable fashion.

Regression Testing

Defect No.	Description	Severity	How to Correct
1.	After removing the pairwise entries, the list return a wrong list of transaction with lots of duplicates.	1	Fixed the database query using Join instead of crossing all tables together.

Module: Post Ride Request (Signup -> Signin -> Post Request)

Incremental Testing

Defect No.	Description	Severity	How to Correct
1.	After signin, when frontend send post ride request request to backend, always get invalid userid. The cookie	1	Stored cookie and add cookie to request when frontend send request to backend.

	is not stored after signin to verify session.		
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Regression Testing

Defect No.	Description	Severity	How to Correct
1	After user signed in and successfully stored the cookie, the user can perform any action on behalf of any other existing user. Backend logic should not only check the cookie frontend send back, but also keep action to that specific user only.	2	Added attribute to session to keep track of the userid logged in for that session and verify the userid matches before every action.

Module: Confirm Join Offer Pickup (Signup->Signin->Post Ride Offer->Search Ride Offer->Join Ride Offer->Confirm Join Offer Pickup)

Incremental Testing

Defect No.	Description	Severity	How to Correct
1.	After confirming join offer, the offer status is not updated.	2	Updated the offer status to over after confirmed a join offer and update the status using the driver's userid instead of the passenger.
2.	After confirming join offer, the joined offer status is not updated.	2	Fixed typo in database query for updateJoinedStatus.
3.	Frontend did not show the right code for pickup.	1	Fix by retrieving the right data from the backend.
4.	Frontend could not receive success response from the backend.	2	Fix by making sure frontend is waiting until backend to send response.

Regression Testing

Defect No.	Description	Severity	How to Correct
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1.	Updating offer status to over makes other users joined the same offer fail to confirm join.	1	Added another offer status as someone confirmed and update other status checking logic accordingly.
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Module: View Transaction (Signup->Signin->Post Ride Request->Search Ride Request->Accept Ride Request->Confirm Accept Ride Request Pickup->View Transaction)

Incremental Testing

Defect No.	Description	Severity	How to Correct
1	When the user fails to confirm the ride when it is over, the charge is recorded in transaction as to and from the same user. When viewing transaction, it is confusing. It should be transfer from user to penalty account.	3	Added a default user in database as a penalty account and recorded transaction of charges with penalty account as the 'to' subject.

Regression Testing (No defects found after above fixes)

Defect No.	Description	Severity	How to Correct

Module: View Transaction (Signup->Signin->Post Ride Offer->Search Ride Offer->Join Ride Offer->Confirm Join Offer Pickup->View Transaction)

Incremental Testing

Defect No.	Description	Severity	How to Correct
1.	When join offer is over in case that only one of the user joined the ride offer confirmed the join offer, the point computation is not right. The reserve should not be deducted if the driver confirmed pick up someone although not all.	2	Corrected the point computation logic for join offer, only deduct reserve one time if multiple user joined a same offer.

2.	The points of the user is always the default value.	1	Updated the parameter fed to UserViewPointsResponse to get the actual point value instead of the default.
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Regression Testing

Defect No.	Description	Severity	How to Correct
1.	After correcting the point computation for multiple user joining offer, the confirmed pickup point is double counted when ride is over.	1	Corrected the point computation logic by moving the multiple user joined a same offer check inside the loop.
2.	After correcting the point computation for multiple user joining offer, the driver get payment of the price and the reserved points for picking up passengers after the first one. The driver should only get paid of the price, no reserve point should be received.	2	Added another payment condition to take care of the case that driver picks up more parties after the first pickup.

Module: View Points (Signup->Signin->View Points)

Incremental Testing

Defect No.	Description	Severity	How to Correct
1.	Points takes a bit of time to load in.	3	Added a loading screen as the site is waiting for the points.
2	Points page keeps showing invalid user id error.	3	Added missed break keyword in switch statement.

Regression Testing (No defects found after above fixes)

Defect No.	Description	Severity	How to Correct

Module: Search Offer (Signup->Signin->Post Ride Offer->Search Ride Offer)

Incremental Testing

Defect No.	Description	Severity	How to Correct
1.	Getting no results found during search when there should be results.	1	Removed invalid address from the database that was causing the error.
2.	Date and time on search is not on the right time zone.	2	Converting the date and time to the right time zone before sending the search request.
3.	Search does not show results with all the available rides.	2	Fixed search algorithm to include other rides.
4	Search request sending the wrong date format.	1	Fixed by changing the format of the date.
5	Travel time and date and time is displayed in a non readable fashion.	3	Changed the travel time and date and time to display in a readable fashion.

Regression Testing

Defect No.	Description	Severity	How to Correct
1	After fixing search offer, login fails. The server does not start properly.	1	Uncommented the server code and commented the testing code.

Module: Search Request (Signup->Signin->Post Ride Offer->Search Ride Request)

Incremental Testing

Defect No.	Description	Severity	How to Correct
1.	Getting no results found during search when there should be results.	1	Removed invalid address from the database that was causing the error.
2.	Date and time on search is not on the right time zone.	2	Converting the date and time to the right time zone before sending the search request.
3.	Search does not show results with all the available rides.	2	Fixed search algorithm to include other rides.

4	Search request sending the wrong date format.	1	Fixed by changing the format of the date.
5	Travel time and date and time is displayed in a non readable fashion.	3	Changed the travel time and date and time to display in a readable fashion.

Regression Testing

Defect No.	Description	Severity	How to Correct
1	After fixing search request, login fails. The server does not start properly.	1	Uncommented the server code and commented the testing code.

