|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Presentation Tier | Logic Layer | Data tier |  |
| Admin side (website) | -> Login and signup form  ->Form for entering caller’s details  ->Form for generating case report for that particular caller.  ->Interface for displaying reports and statistics.  ->Interface for closing the case that is marked as completed.  -> Interface for adding new employees .  ->Interface for deleting employee. | Get details of the caller as well as the case details.  -Get statistics.  -Get all the cases where the case status is equal to complete  Get details of the employee to be added or deleted. | Add caller’s and case  details in their relevant tables.  Search for the particular criteria to generate stats and also search for case status which is saved as completed and then send the results back to the interface.  Simply add the employee to its relevant table in firebase.  Search for the employee to be deleted and delete that employee. |  |
| Plumber side (Mobile app) | ->Login interface  ->Interface to display the “to-do list”.  ->Interface to scan barcode.  -> Interface to upload images of installation or repairs.  ->Interface to upload the COC. | Get the credentials of the plumber.  Get the plumber’s ID  Get the barcode  Get the images | Match the credentials with the one in the database, if it matches then login else display error message.  Based on the plumber ID get the job that this particular plumber needs to do and send back the list to the “to-do list” interface.  Save the barcode under its relevant table in the database.  Store the images in firebase storage under its relevant folder. |  |

n-tier

admin portal side

On the portal side we start on the presentation tier with the login form with the option to move to the signup form if you are a new user, followed by retrieving the necessary information in order to generate a new case. From there the logical layer comes into play where we receive the corresponding details from the user or caller and add it to the data tiers part which is the database.

Another aspect of the presentation tier is the interface for display reports and statistical graphs as well as the interface for closing cases marked as complete. In order to do this we need to first retrieve the information accordingly and display them in the correct form using logic tier.

The final section of the presentation tier is the interface for adding and removing employees which uses the logic tier to navigate to the corresponding tables and either remove or populate the tables as needed according to the data tier.

Mobile Application side

Similarly to the portal side the mobile application also follows an n tier architecture with the presentation tier using a login interface, a display the “to do” job interface, a barcode scan interface and a interface to take images and store documents which is the main purpose of the mobile application. When we move to the next tier which is the logic tier we deal with getting the credentials for the login, using the plumbers ID to know what job they have to complete, obtaining a value barcode from the scan and obtaining the image to use in the next tier. The next tier being the data tier, this allows us to match the correct credentials with what was used to login in with that on the database and then know how to proceed, for the “to – do” list the data tier allows us to retrieve the case information for the plumber to complete, this is done based on the plumbers ID. For the barcode scan it just stores the value in to correct table to assign later to the specific geyser of the specific case. For the images it allows us to store the actual image taken or a compressed version in the database in order to save space. This is also saved in its relevant folder and the path to this folder is then stored in the corresponding table of geyser information to make searching easier.

Event driven architecture

Entering of specified data into corresponding fields and submitting via button to either redirect to home page or display error message or log to server database. By clicking the display button for each type, a graph specific to the criteria is displayed. An event may not just be user side though. In the event that a larger amount of users log onto the portal, a spin up event will occur whereby more resources will be allocated in order to handle the number of users and vice versa when the number of users goes below a certain level a spin down process will occur releasing unneeded resources. When a new case is logged from the admin portal an event will trigger to alert the corresponding plumber app to notify them that there is a new job to do.