Ridekick

CSC261: Database Systems

Prof. Zhupa

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Project Details

This project will be completed by Henry Gardner and Gabby Novak and has the title Ridekick. Refer to the next sections for the project description and how we will go about building it.

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Problem Statement

This project will allow any University of Rochester-associated individual (student, faculty, staff, etc.) to check the status and schedule any available university related transportation services, schedule appointments to guarantee a spot on such services, and receive live administrative updates such as delays, temporary closures and route changes, etc. Currently, the university operates two separate systems to handle these functions: one that delivers data regarding scheduling and another that handles reservations. However, these systems are not well synced, providing justification for a combined solution. Note that this proposal does contain a simplification in that routes are treated as one-way units with distinct start and end points rather than the sum of travel between many stops. The goal is to simplify traveling throughout UR's campus and the greater Rochester area, thus facilitating UR associated-individuals' (particularly students') engagement with the wider community. Such a system's ability to handle live data queries quickly and remain valid (disallowing overbooking) in the face of concurrent reservation placing is crucial. Both these functions are outside the scope of a spreadsheet while SQL's data queries offer a reliable solution.

Target User

As mentioned above, this program will be targeted for University of Rochester associated individuals, with administrators being the University of Rochester Transportation Center/workers. Anyone should be able to view the current routes, delays, etc. but only those related to UR should be able to schedule and view their appointments. The administrators will

be able to manually add new routes, buses, or other transportation services, change/override routes, adjust appointments, create/modify database tables, etc.

List of Relations

We will need:

1) Passenger table detailing information about a University of Rochester associated individual
2) Service table detailing all of the services provided (for example the gold line bus)
3) Routes table with a service, starting and ending locations, if it is active (currently running), and other more specific information about a route
4) Appointment table for all of the active appointments (and potentially past appointments)
5) Traffic table detailing any time changes to the routes active.

There are lots of other potential tables like a worker table that we can add, but this seems like a good place to start. A temporary look into each of these tables with their attributes can be seen below:

Database:

Passenger Table

passenger_id (Integer)	name (String)	ur_association (String)	num_active_appointments (Integer)

Service Table

service_id (Integer)	name (String)	type (String)	is_active (Boolean)

Routes Table

route_id (Integer)	service_id (Integer)	start (String)	end (String)	num_active_appointments (Integer)

Appointments Table

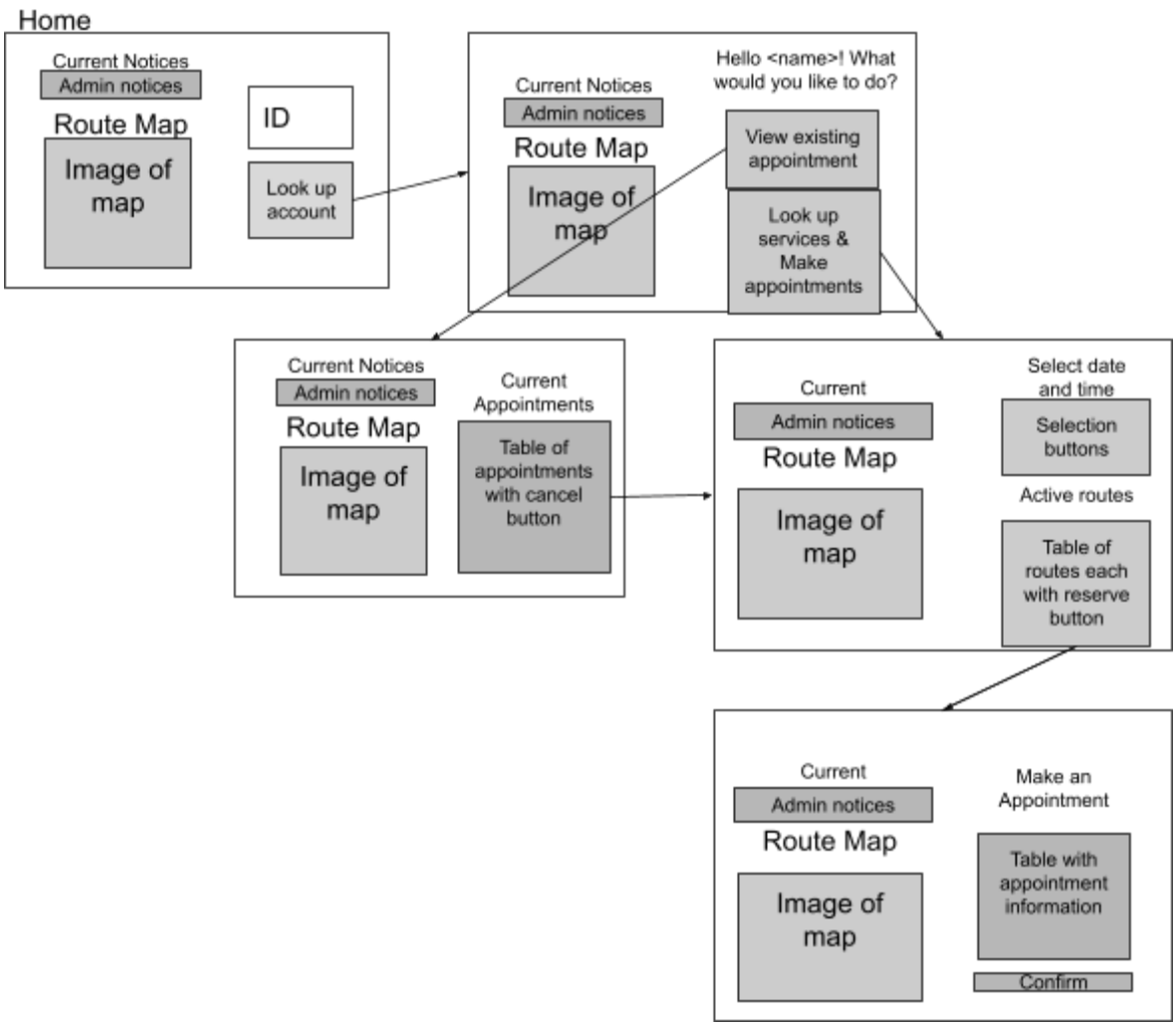
appointmnet_id (Integer)	passenger_id (Integer)	service_id (Integer)	date (Time/String)	Time (Time/String)

Traffic Table

traffic_id (Integer)	type (String)	service_id (Integer)	delay_time (Integer +/-)

Web-Interface

The point of this project and program is for simplicity. Therefore, it is incredibly important that the web interface is easy to use and extremely easy to navigate. We will need to have multiple HTML pages designated for the appointment scheduling, seeing active routes, etc. Therefore, we will have a main home page that will access those listed items somewhere easily accessible. This will be completed with HTML, CSS, PHP, and JavaScript (for added style and features). If time permits, adding minor animation features like progress bars when submitting an appointment etc. will be added. A general idea of what our page will look like can be seen in this sketch (arrows from buttons to pages indicate links to pages):



Data

The good news is that there is already a large amount of data available for us on the University of Rochester website. Information about the buses, routes, and information like that is already available, so we will just need to scrape the web to gather this information and add it into our database. Depending on how much we want to add, a Python program could speed this up. For the appointment data, we can either manually create our own mock appointments, dynamically write something to add a bunch of random ones, or even send it to our friends and have them make mock appointments. As of the development of the project commences, this will not be released to the general UR public, so there is no need to fill the appointment table with actual "real" appointments. Generally speaking, everything else can be found online. This project is hosted on a GitHub repository for ease of development: https://github.com/hgardne4/Ridekick.