How to Use this Template

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Submission Instructions

1. After you’ve completed all the sections, download this document as a PDF [File → Download as PDF]
2. Create a new GitHub repo for the capstone. Name it “**Capstone Project**”
3. Add this document to your repo. Make sure it’s named “**Capstone_Stage1.pdf**”

GitHub Username: violetwee

SG Bus Transit

Description

SG Bus Transit is a public bus transit app for Singapore. It provides quick access to estimated bus arrival timings and location of the bus on a map.

Knowing when a bus arrives allows commuters to plan their route better and reduces the waiting time at bus stops.

Intended User

Commuters who take public buses in Singapore.

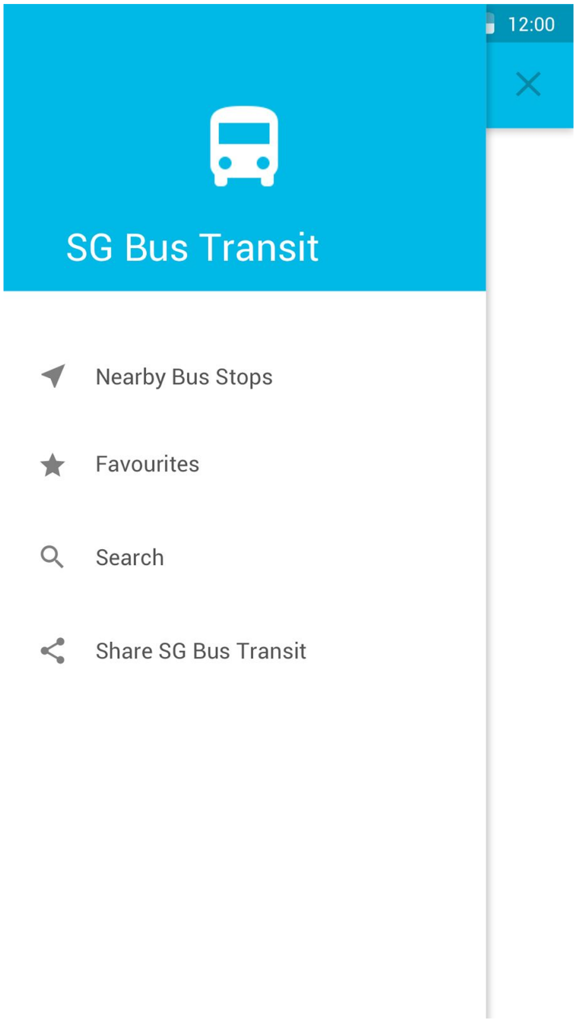
Features

- Shows estimated arrival timings for buses
- See location of a bus on map
- Discover nearby bus stops
- View buses in nearby bus stops
- Save favourite bus stops
- Notify user when bus is 1 bus stop away (so user can get ready to board)
- Share SG Bus Transit app with friends

User Interface Mocks

These can be created by hand (take a photo of your drawings and insert them in this flow), or using a program like Photoshop or Balsamiq.

Screen 1



12:00

SG Bus Transit

Nearby Bus Stops

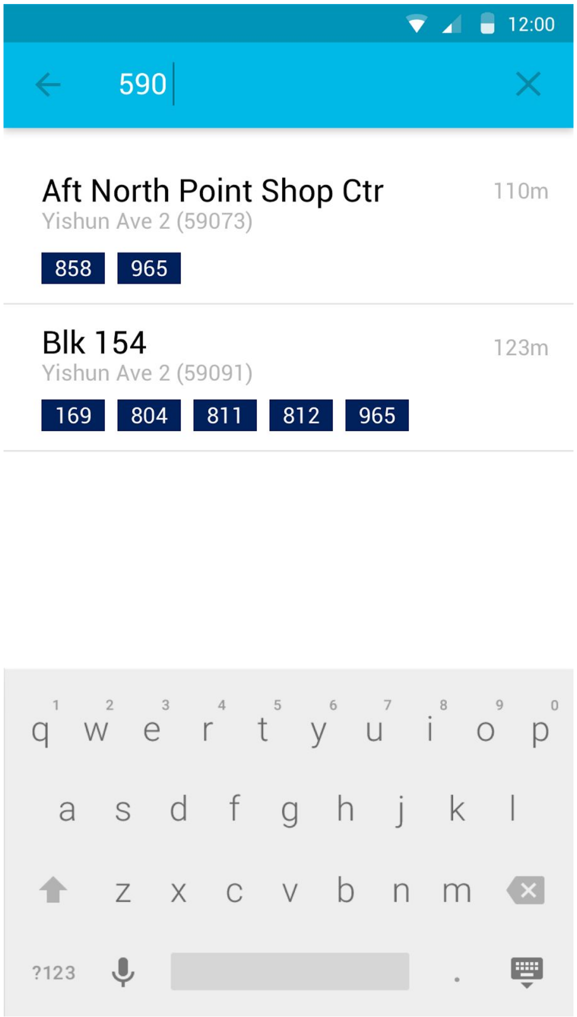
Favourites

Search

Share SG Bus Transit

Main navigation drawer to go to other screens.

Screen 2



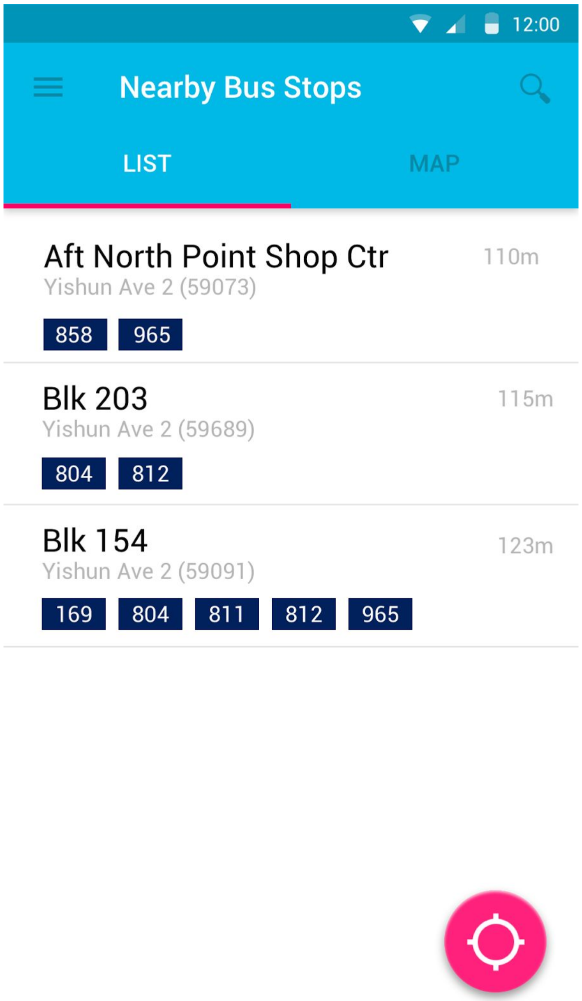
590

Aft North Point Shop Ctr 110m
Yishun Ave 2 (59073)
858 965

Blk 154 123m
Yishun Ave 2 (59091)
169 804 811 812 965

Search for places, bus stops and bus service numbers.

Screen 3



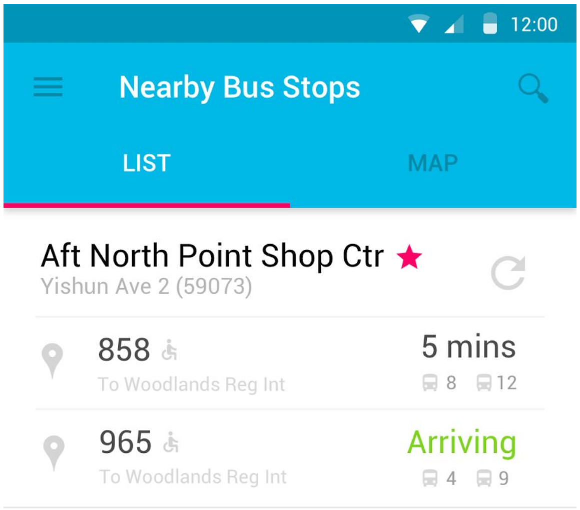
Aft North Point Shop Ctr 110m
Yishun Ave 2 (59073)
858 965

Blk 203 115m
Yishun Ave 2 (59689)
804 812

Blk 154 123m
Yishun Ave 2 (59091)
169 804 811 812 965

List of nearby bus stops based on user’s device GPS location.

Screen 4



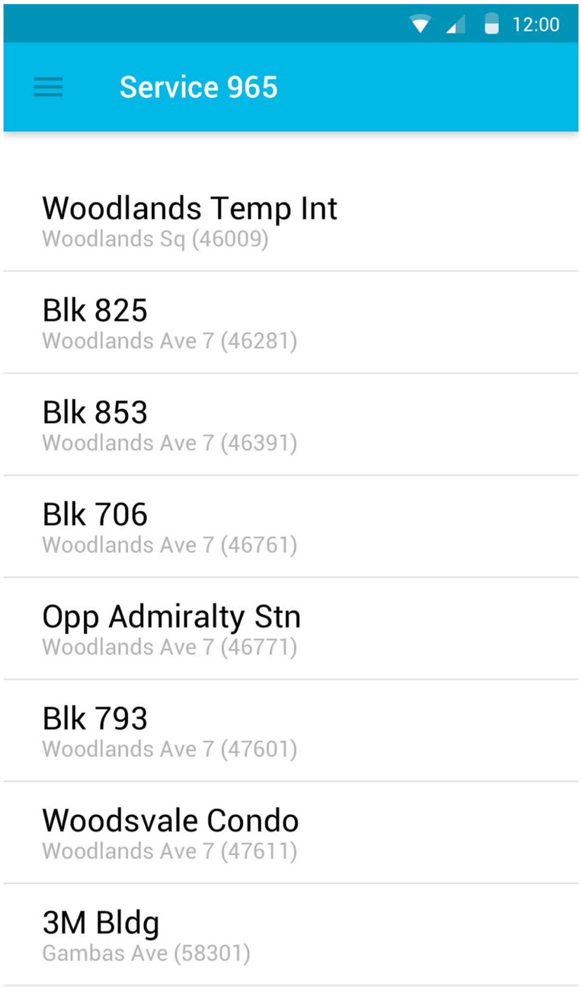
Aft North Point Shop Ctr ★
Yishun Ave 2 (59073)

858
To Woodlands Reg Int
5 mins
8 12

965
To Woodlands Reg Int
Arriving
4 9

Shows bus arrival timings for buses at a selected bus stop.

Screen 5



Service 965

Woodlands Temp Int
Woodlands Sq (46009)

Blk 825
Woodlands Ave 7 (46281)

Blk 853
Woodlands Ave 7 (46391)

Blk 706
Woodlands Ave 7 (46761)

Opp Admiralty Stn
Woodlands Ave 7 (46771)

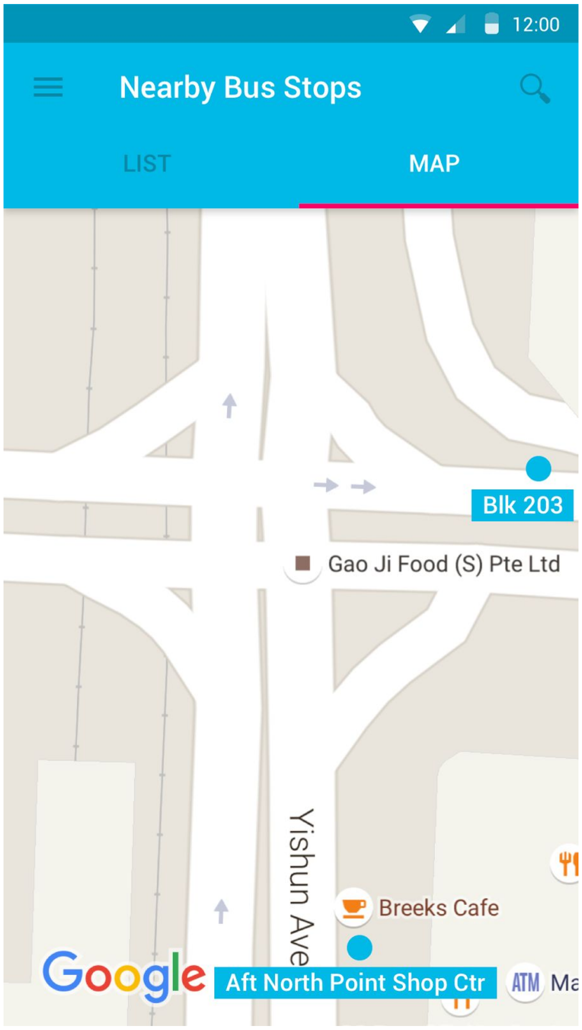
Blk 793
Woodlands Ave 7 (47601)

Woodsvale Condo
Woodlands Ave 7 (47611)

3M Bldg
Gambas Ave (58301)

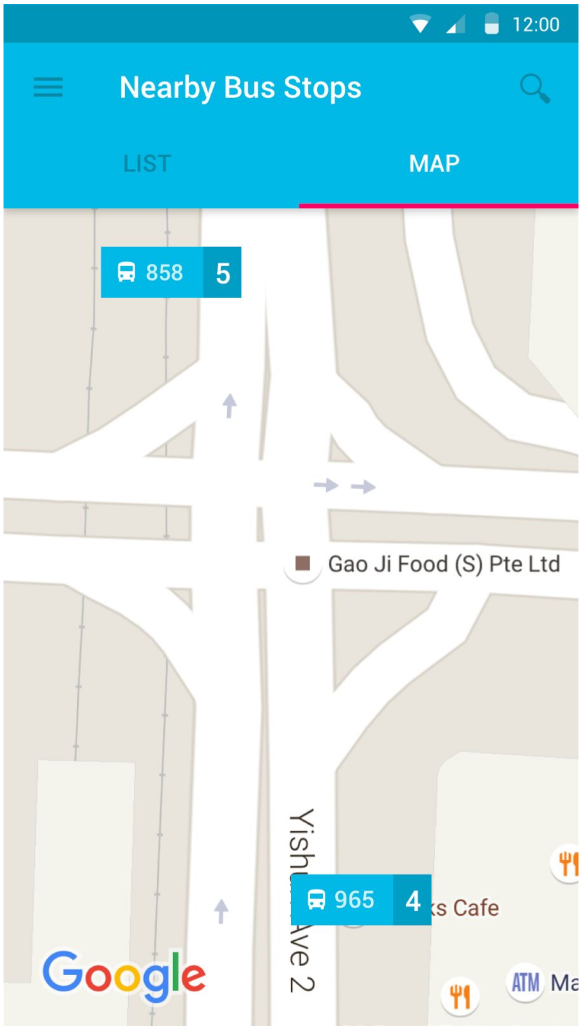
Show bus route for a selected bus service number (eg. 965).

Screen 6



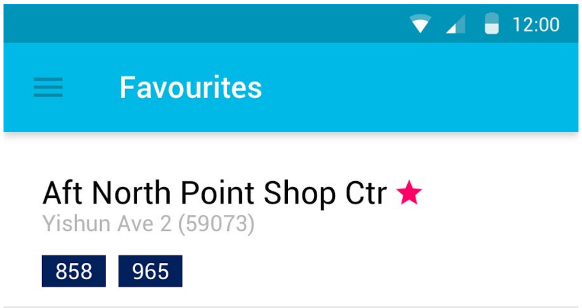
Show nearby bus stops on Google Map.

Screen 7



Show nearby buses on Google Map.

Screen 8



Aft North Point Shop Ctr ★
Yishun Ave 2 (59073)

858 965

Show bus stops that user has favourited.

Key Considerations

How will your app handle data persistence?

Favourite bus stops will be stored locally using content providers. Bus arrival timings will be from LTA Data Mall (http://www.mytransport.sg/content/mytransport/home/dataMall.html).

Describe any corner cases in the UX.

Information will be displayed in tabs and navigation between other screens will be through a navigation drawer. Navigation drawer will provide quick access to all the screens. However, if a user navigated away from Screen 2 Tab 2, then when he navigates back to the same screen, Screen 2 Tab 1 will be displayed instead.

Describe any libraries you'll be using and share your reasoning for including them.

Moshi (https://github.com/square/moshi) to handle JSON parsing to Java objects. As the data returned from the DataMall API will be in JSON, using a library for JSON would simplify the JSON parsing process.

OkHttp (https://github.com/square/okhttp/) to handle API requests. This will help to ensure that the API requests are handled efficiently and improve the performance of the app.

Next Steps: Required Tasks

This is the section where you can take the main features of your app (declared above) and decompose them into tangible technical tasks that you can complete incrementally until you have a finished app.

Task 1: Project Setup

- Download and configure the necessary 3rd party libraries
- Set up content provider to store favourite bus stops and buses
- Register for access to LTA DataMall bus arrival timings API

Task 2: Implement UI for Each Activity and Fragment

- Build UI for MainActivity
- Build UI for NearbyBusStopsFragment
- Build UI for SearchFragment
- Build UI for FavouritesFragment
- Build UI for BusArrivalsFragment
- Build UI for MapActivity

Task 3: Implement Nearby Bus Stops Fragment

Get device’s GPS location and retrieve a list of nearby bus stops and buses via DataMall API.

1. Get device’s current GPS location
2. Retrieve list of bus stops’ GPS locations from API
3. Find nearby bus stops based on step #1 and #2
4. Display nearby bus stops in a List View

Task 4: Implement Search Fragment

Allow user to perform a search for bus stops based on a unique bus stop code (5 digit identifier for a physical bus stop), road name or name of nearby landmarks (if any).

1. Read user’s search text
2. Match with bus stops’ attributes (BusStopCode, RoadName and Description)
3. Display bus stop in a List View
    a. Tapping a bus stop in the List View will show bus arrival timings for all the buses at this bus stop (Task 6)

Task 5: Implement Bus Arrivals Fragment

Allow user to see bus arrival timings for a selected bus stop.

1. Retrieve list of buses based on the unique bus stop id
2. Retrieve list of arrival timings for all buses
    a. App fetches bus arrival timings for these buses and displays in a List View
    b. App updates the timings at 1min interval
    c. Tapping on the bus service number will show its bus route (Task 8)
    d. Tapping on the map icon for a bus service number will show the bus location on Google Map (Task 7)

Task 6: Implement Favourites Fragment

Allow user to add a bus stop as a favourite to quickly view the arrival timings for buses at this bus stop.

1. From Bus Arrivals Fragment (Task 5), allow user to tap a star icon to add the selected bus stop as a favourite
2. Store this favourite in local database
3. Display list of favourite bus stops in a List View

Task 7: Implement Map Activity

Allow user to see a selected bus location on Google Map.

1. From Bus Arrivals Fragment (Task 5), get the GPS location of the selected bus
2. Plot the GPS location on Google Map

Task 8: Implement Bus Route Fragment

Allow user to view the bus route of a selected bus service number.

1. From Bus Arrivals Fragment, get the bus service number and retrieve the bus route information from the DataMall API
2. Display the bus route information

Task 9: Implement Widget

Allow user to access his list of favourite bus stops from a widget so that he can quickly load the bus arrival timings.

1. Show favourite bus stops in widget
2. Tap on a favourite bus stop to launch app and show bus arrival timings for buses in the bus stop

Task 10: Implement Notifications

When one of the buses that the user is tracking is about to arrive (1 bus stop away or <1 min away), show a notification on the device.

Task 11: Implement Share App

User can share the SG Bus Transit app with a friend.

1. Tap on Share SG Bus Transit
2. Select channel to share app (eg. WhatsApp, Messaging etc)

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