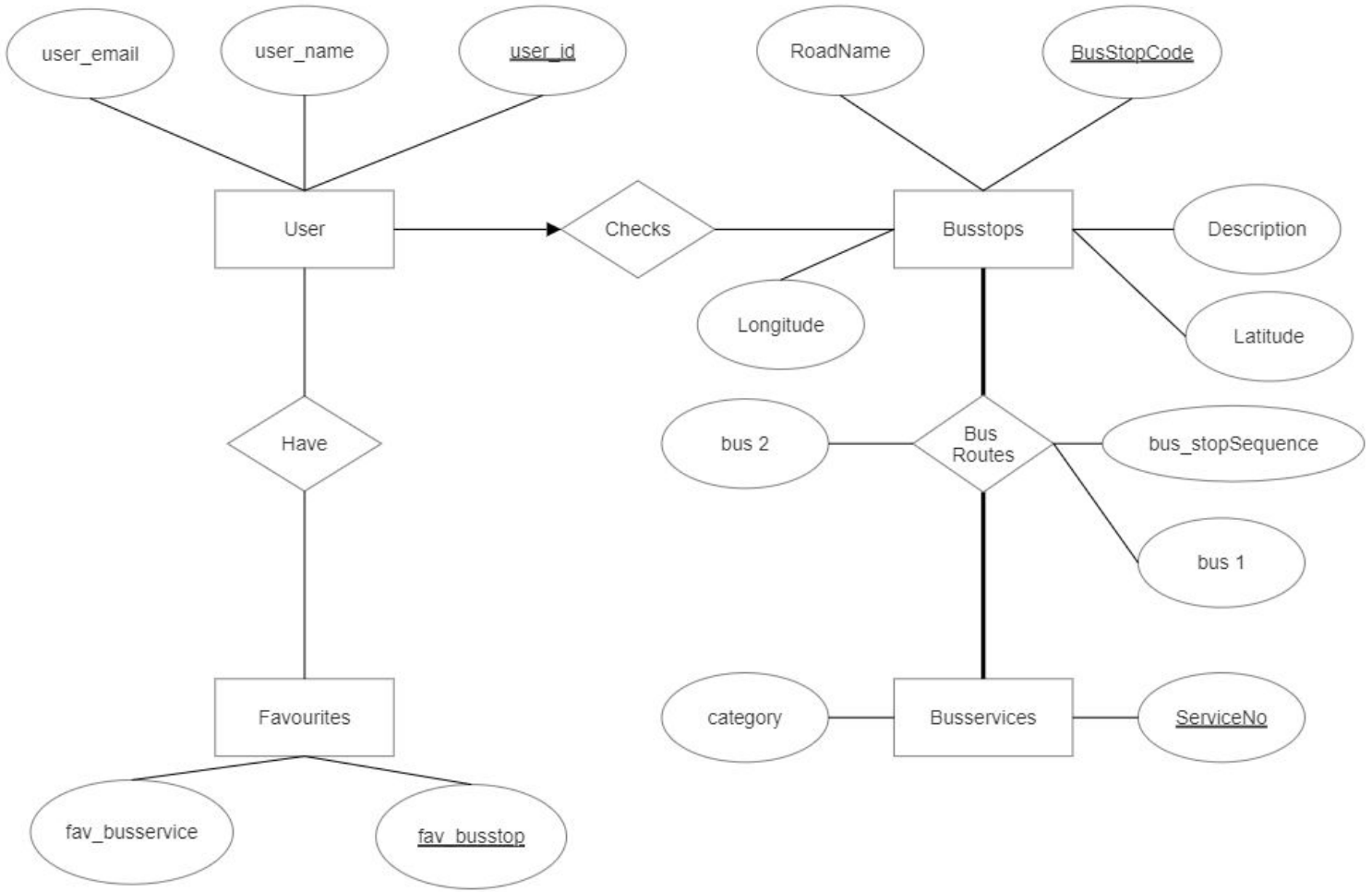
Group # <19>

<Bus Tracking Application>

Description of Application

- This application uses the data of all bus arrivals, services, and bus stop numbers in Singapore.
- The application will be able to display bus information such as the bus timing arrival and bus routes.
- Each individual users will be able to create an editable list of “favorites” to save the buses or bus stops that they use frequently.
- The bus is a popular mode of transport in Singapore but only a limited number of bus stops have an electronic panel to display the bus arrival timing. The key idea behind the development of this application is to use public transport data online for everyone to easily access this bus information.

ER diagram


user_email
user_name
user_id
User
Checks
RoadName
BusStopCode
Busstops
Description
Longitude
Latitude
Have
bus 2
Bus Routes
bus_stopSequence
bus 1
Favourites
category
Busservices
ServiceNo
fav_busservice
fav_busstop

Relational Schema and Dataset

Entity/Table Name	Relational Schema	Size (# of rows)	Details of Data
BusRoutes	BusRoutes (BusStopCode: varchar(300), ServiceNo: varchar(300), StopSequence: varchar(300), bus1: varchar(300), bus2: varchar(300))	25,045 rows	https://datamall.lta.gov.sg/content/datamall/en/search_datasets.html Seperate table for synthetic data of bus timings
BusServices	BusServices (ServiceNo: varchar(300), category: varchar(300))	700 rows	https://datamall.lta.gov.sg/content/datamall/en/search_datasets.html
Favourites	Favourites (fav_busstop: varchar(300), fav_busservice: varchar(300))	7 rows	Synthetic Data of users

Relational Schema and Dataset

Entity/Table Name	Relational Schema	Size (# of rows)	Details of Data
Have	Have (user_id: varchar(300), fav_bus_stop: varchar(300))	7 rows	Synthetic Data
User_checks	User (user_number: varchar(300), user_name: varchar(300), user_email: varchar(300), busstopcode: varchar(300))	6 rows	Synthetic Data
Bus_stop	BusStops (BusStopCode: varchar(300), RoadName: varchar(300), Description: varchar(300), Latitude: varchar(300), Longitude: varchar(300))	5000 rows	https://datamall.lta.gov.sg/content/datamall/en/search_datasets.html

Five SQL queries

	Description of query	SQL Query
1	User finding the buses available in the bus stop through a bus stop code.	SELECT DISTINCT bi.ServiceNo, bs.BusStopCode, bs.RoadName FROM BusStops bs, user us, BusRoutes bi WHERE bs.BusStopCode = bi.busstopcode and bi.BusStopCode=us.busstopcode and us.user_number = “2101483”;
2	The bus routes for a specific bus service that displays the street name.	SELECT DISTINCT bi.StopSequence, bs.BusStopCode, bs.Description, bi.ServiceNo FROM BusRoutes bi, BusStops bs, Busservices bc WHERE bi.ServiceNo = '181_1' and bi.serviceNo = bc.serviceno and bs.BusStopCode = bi.busstopcode ORDER BY length(bi.StopSequence), bi.stopsequence asc;

Five SQL queries

	Description of query	SQL Query
3	Finding the bus stops around within a short range by entering your location.	SELECT bs.BusStopCode,bs.RoadName, bs.Description, sb.ServiceNo, bs.Latitude,bs.Longitude FROM busstops bs, BusRoutes sb WHERE bs.Latitude between 1.39814 and (1.39814+0.0035) and bs.Longitude between 103.90656 and (103.90656+0.0035) and bs.BusStopCode = sb.BusStopCode;

Five SQL queries

	Description of query	SQL Query
4	Finding the favourite bus stops and bus services for each user.	SELECT u.user_number, f.fav_busservice, bs.category , f.fav_busstop, a.bus1, a.bus2 FROM user u, favourites f, have h, arrivaltiming a, busservices bs WHERE u.user_number = h.user_id and h.fav_bus_stop = f.fav_busstop and a.buscode = f.fav_busstop and a.busno = f.fav_busservice and bs.serviceno = a.busno and u.user_number = "2101483";
5	Finding bus services that goes to a landmark in Singapore from a bus interchange/bus stop.	SELECT br.ServiceNo FROM BusStops bs, BusRoutes br WHERE bs.Description LIKE “%Boon Lay Int%” AND bs.BusStopCode=br.BusStopCode INTERSECT SELECT br.ServiceNo FROM BusStops bs, BusRoutes br WHERE bs.Description LIKE “%Bird Pk%” AND bs.BusStopCode=br.BusStopCode;

Demo through MariaDB