FIT5032 Design Report (Major Application Development High Distinction)

Lets Fly!

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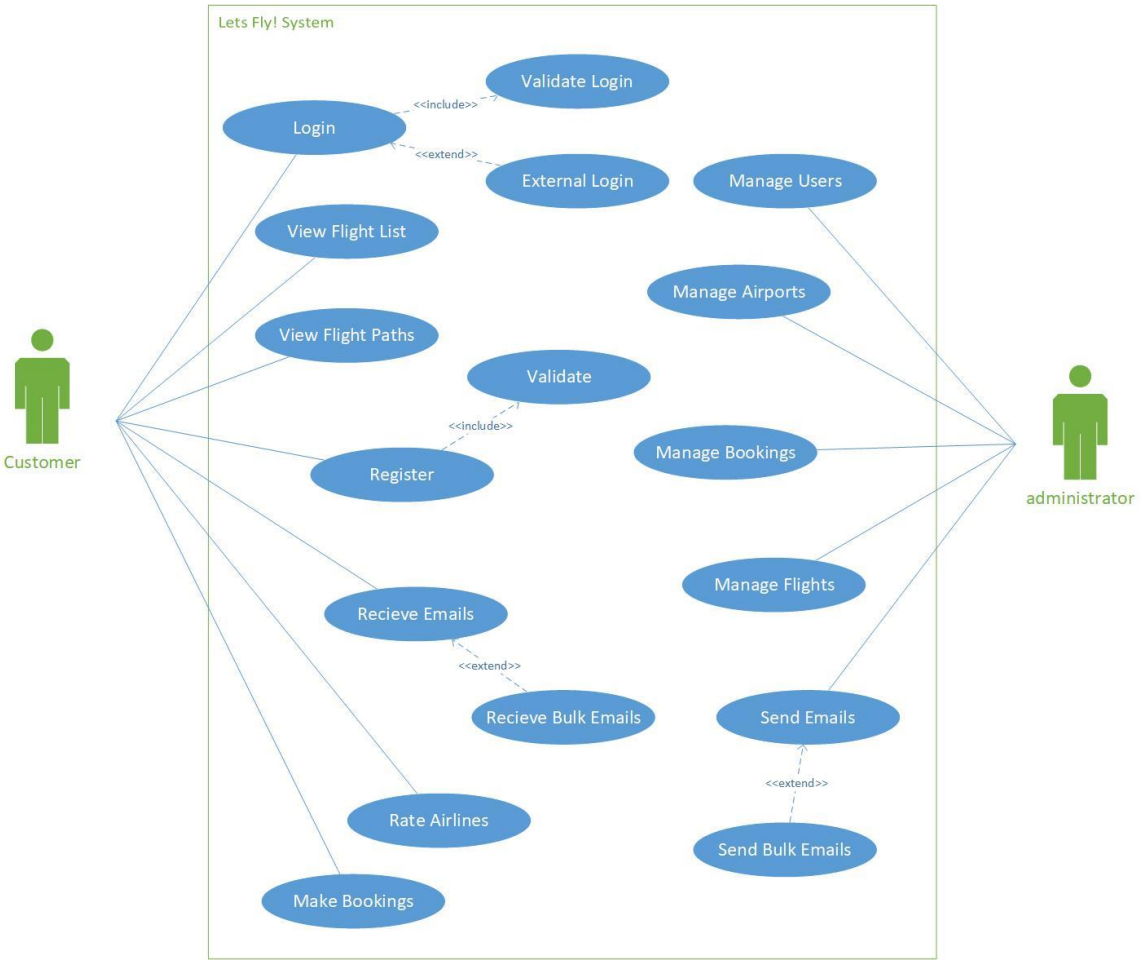
1. **Overview**
   The goals of my application are to provide an easy way for customers to book flight tickets via computer or mobile device, secure web browsing experience, a fully functional and easy to use user interface and a responsive web application to the meet the customers need by providing an interactive experience in the form of sending emails for confirmations.

2. **User stories and Use case diagrams**



User stories:

As Customer I want to register, so I can register in the system.

As Customer I want to login, so I can login to the system.

As Customer I want to view flight list, so I can view the list of flights.

As Customer I want to view flight paths, so I can view the paths of flights.

As Customer I want to receive emails, so I can get confirmation of events for example booking confirmation.

As Customer I want to rate airlines, so I can rate airlines which are good or bad.

As Customer I want to make a booking, so I can make bookings for the flights I want.

As Administrator I want to manage users, so I can manage user list, like disable users and perform CRUD operations.

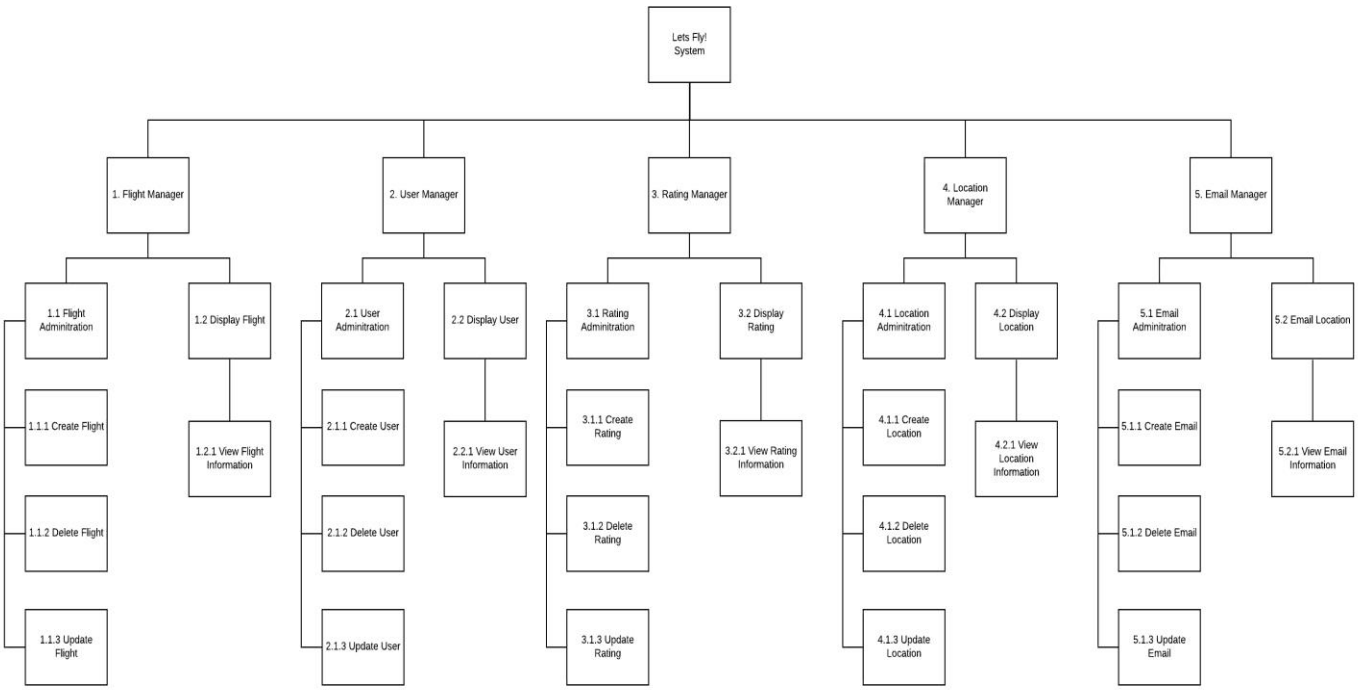
As Administrator I want to manage flights, so I can manage flight list, like add new flights and perform CRUD operations.

As Administrator I want to manage airports, so I can manage airport list, like add new airports and perform CRUD operations.

As Administrator I want to manage bookings, so I can manage booking list, like cancel booking.

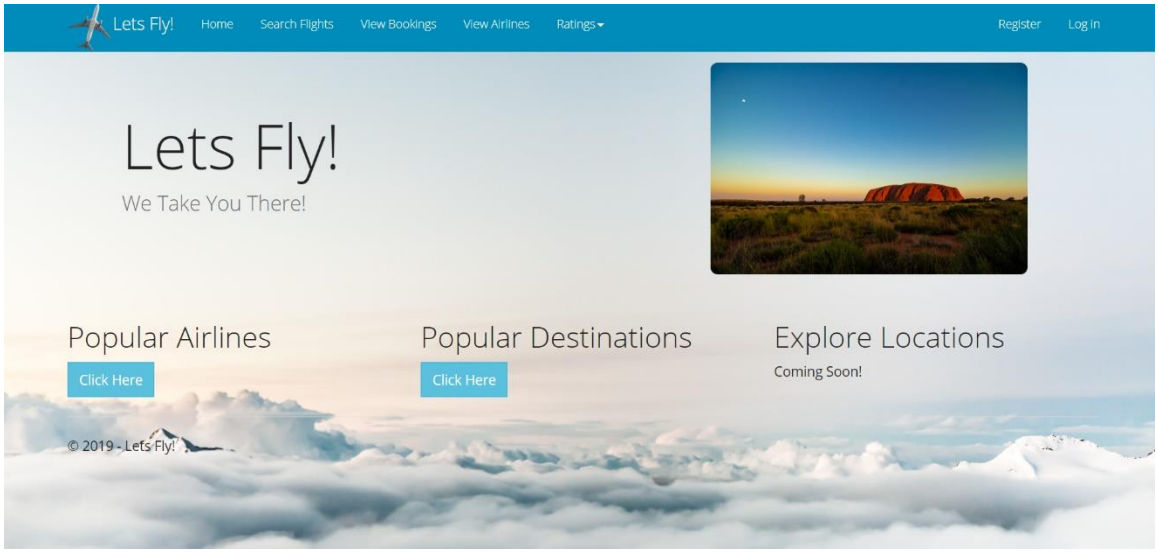
As Administrator I want to send emails, so I can send promotional emails to customers.

3. **Functional diagram**

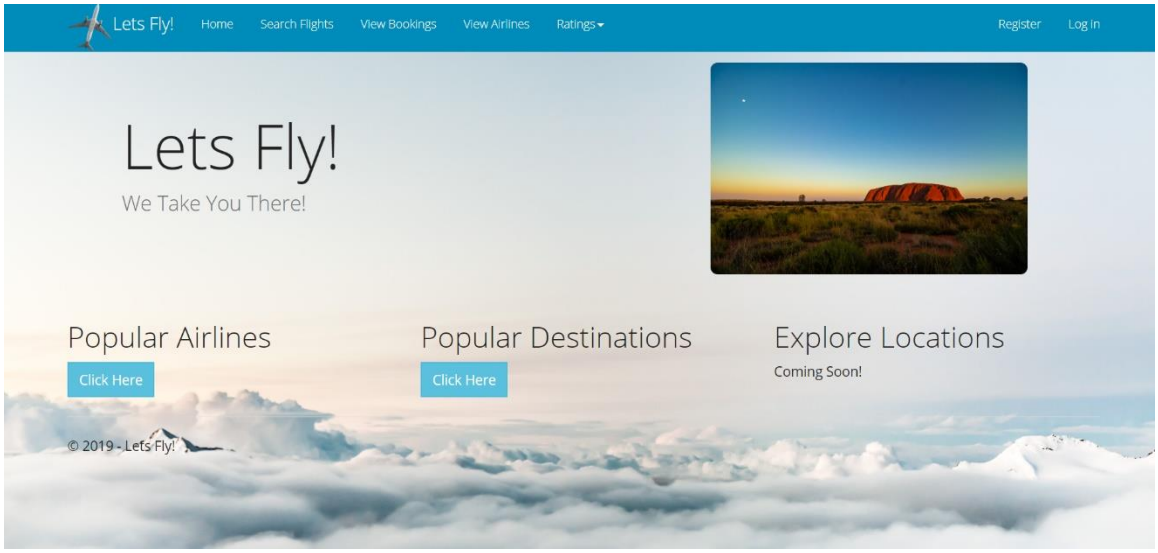


4. **Usability Design Review**

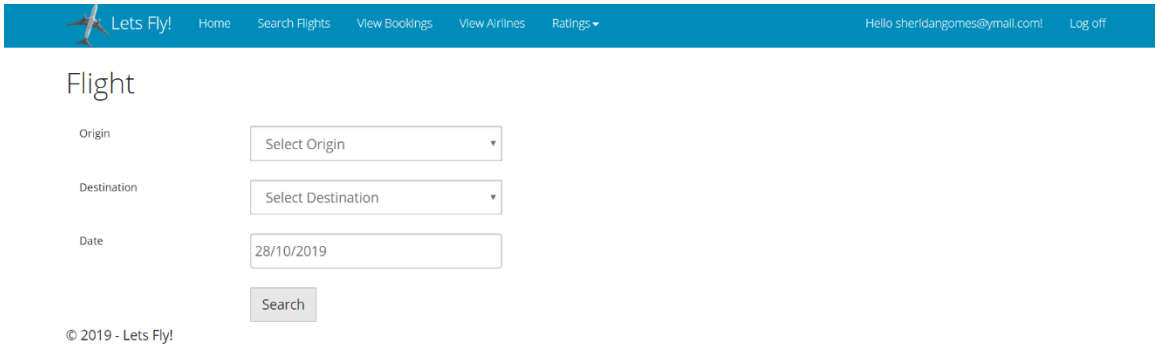
1. Navigation-
   Easy to navigate website, with different ways of using the website, for example different tabs for users, flights, check booking and easy to access login and registration page.



2. Familiarity-
   The website is familiar to other flight booking websites, with different sections offering different functionalities. The website will have a similar user interface with login, registration and booking home page.

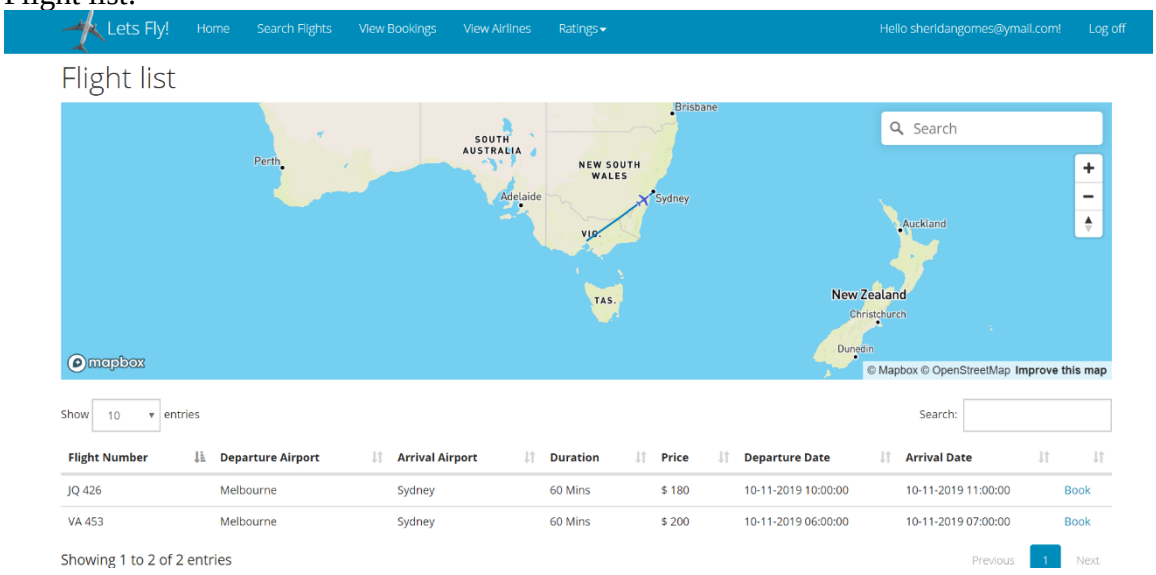


Search flights:

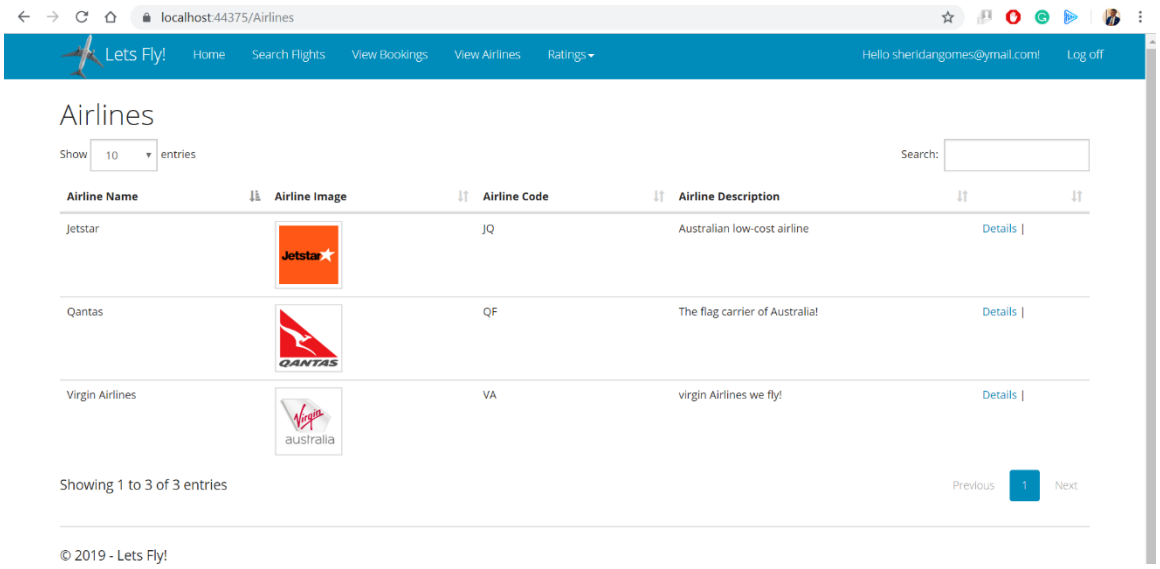


3. Consistency-
   The website will be consistent, the fights page will have a steady view of different flights available based on dates, airlines will have logos in the view airlines sections and a review page for the user to review airlines, with airline dropdown list.

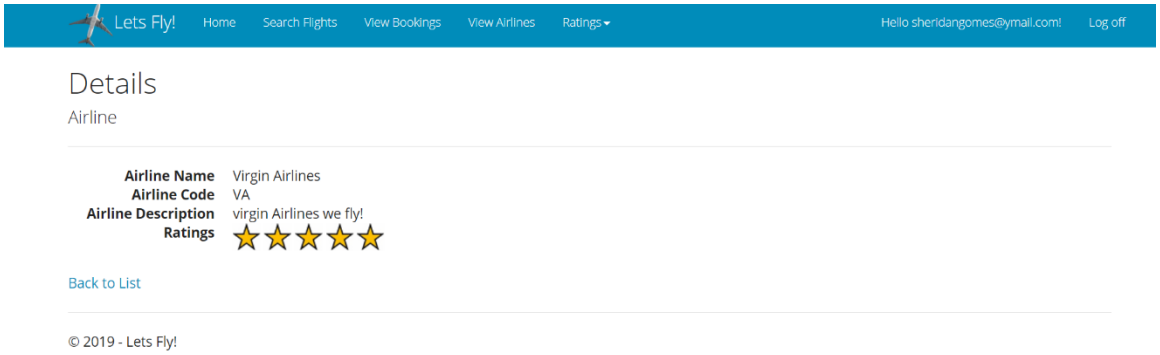
   Flight list:



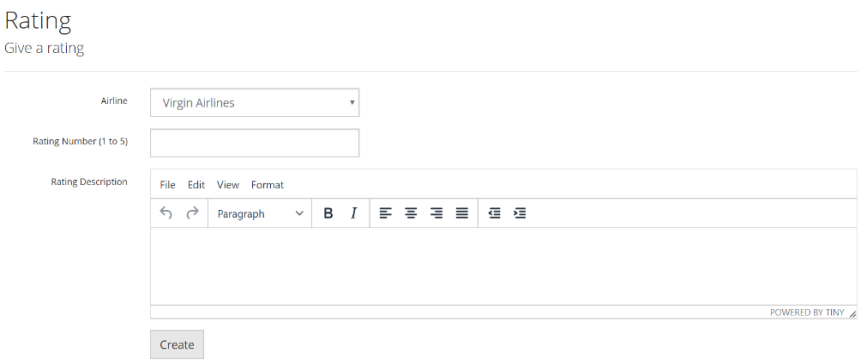
Airline list:



Airline review:

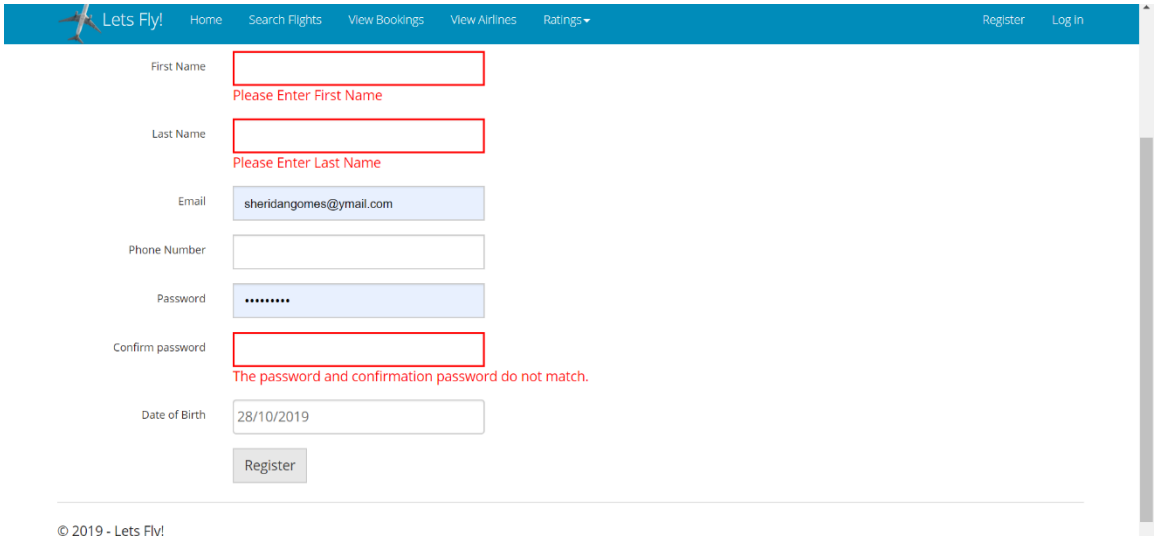


Make review:

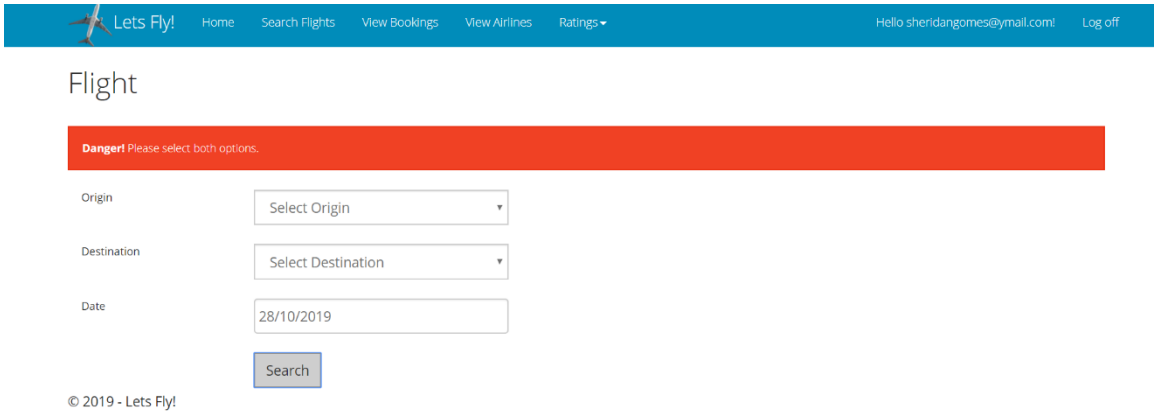


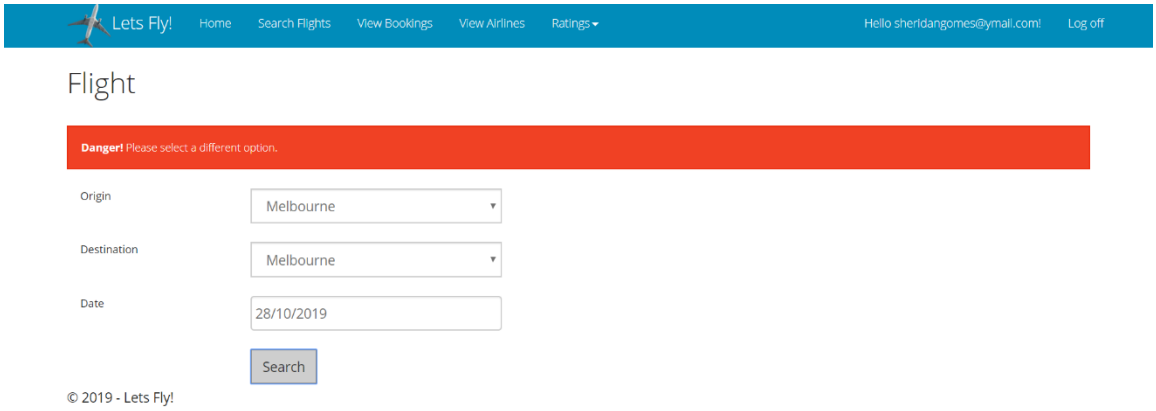
4. Error Prevention
   The website will have multiple validations for users when registering and logging in, there will be a label displaying mistakes to the user, for example if the user doesn't select locations for searching a flight then a red label will appear telling the user to select the correct information and the same will occur if the origin is the same as the destination.

   Registration:



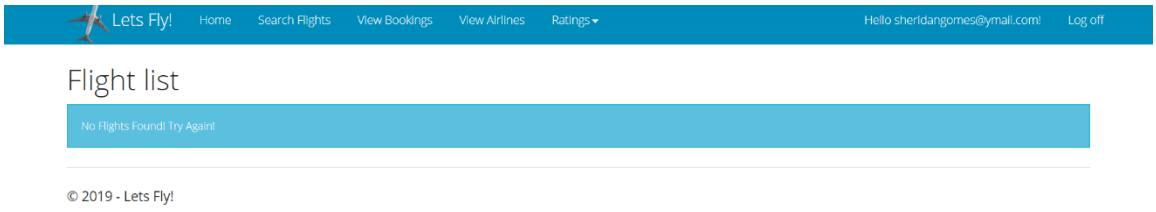
   Search flights:



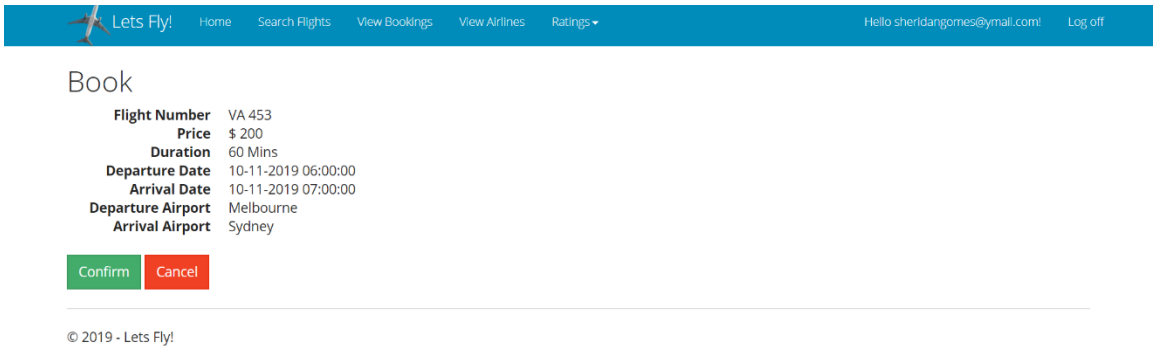


5. Feedback
   The website will give feedback in the form of view bags and labels. For example, when the user wants to confirm a flight booking the color of the button will be green and cancel will be red and view bags if no flights available.

   Booking:

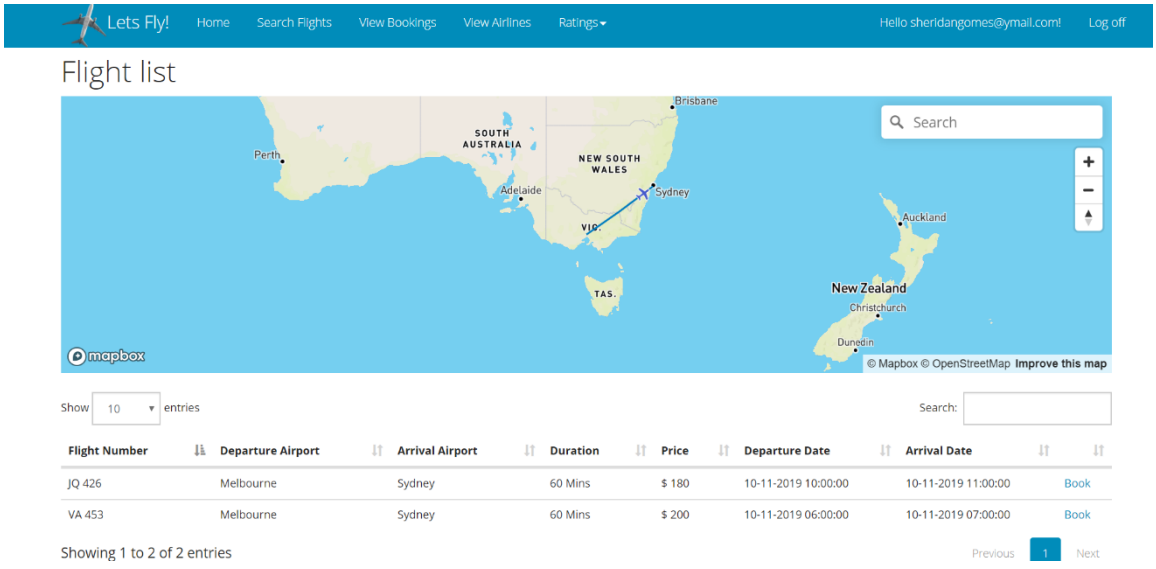


Flight list:

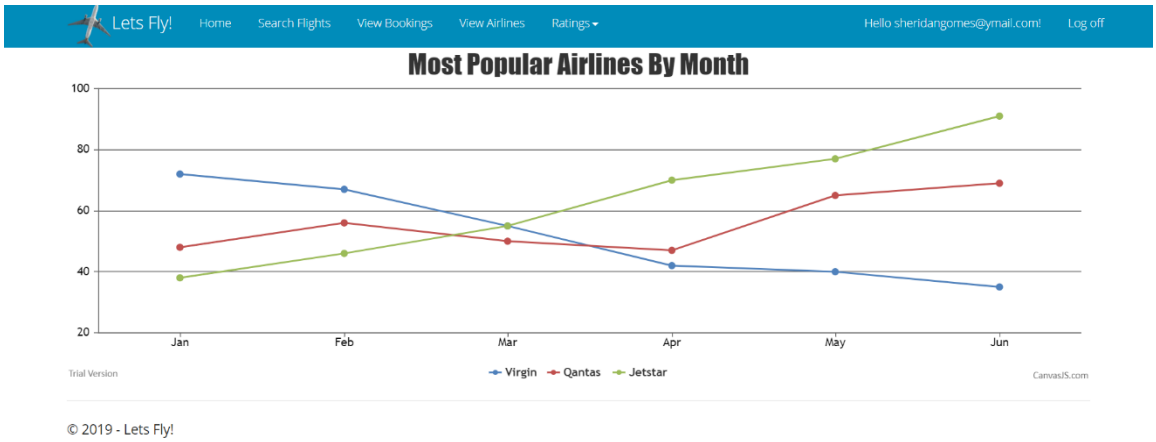


6. Visual Clarity
   All data will have a clear visual view to the customer and admin, like the flight list will be shown clearly one after the other, nav bar will have multiple drop downs to keep it clean and the popular Airlines will be shown in a graph form.

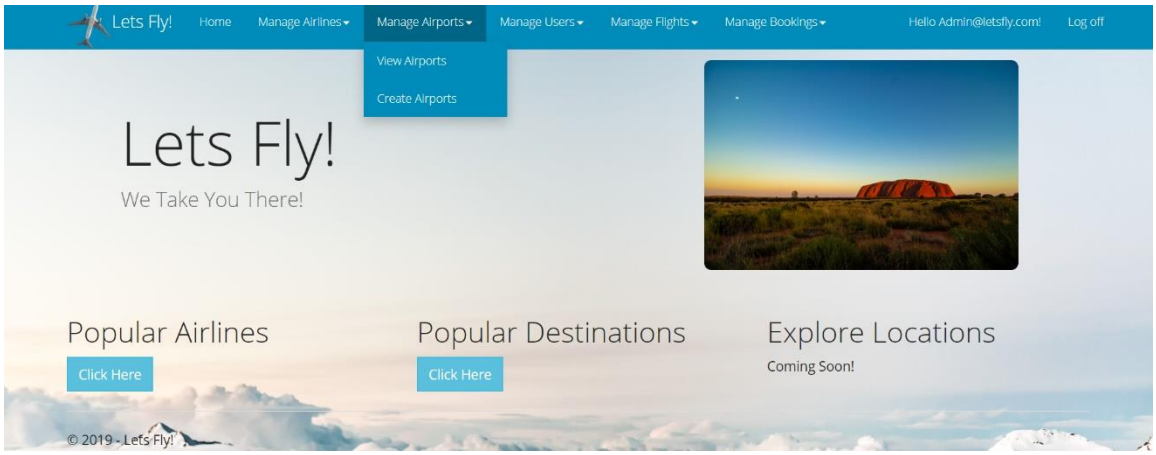
   Flight list:



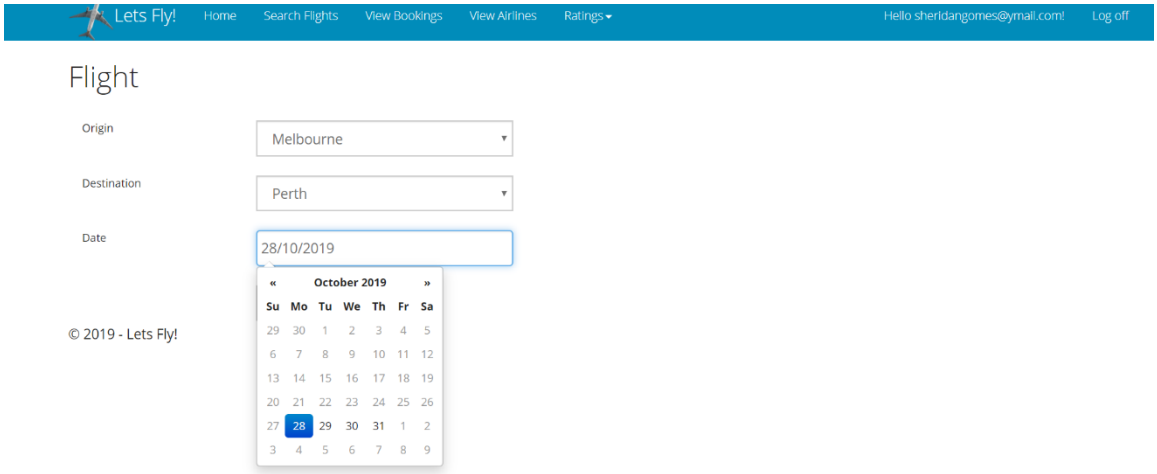
Graph:



Navbar:



7. Flexibility
   The website will have flexibility to book flights, by have search flights page, with two drop down list of the location available for flights, for easy use and having a date picker to choose the date.



References:
https://enginess.io/insights/6-principles-design-la-donald-norman

http://architectingusability.com/2012/06/28/donald-normans-design-principles-for-usability/

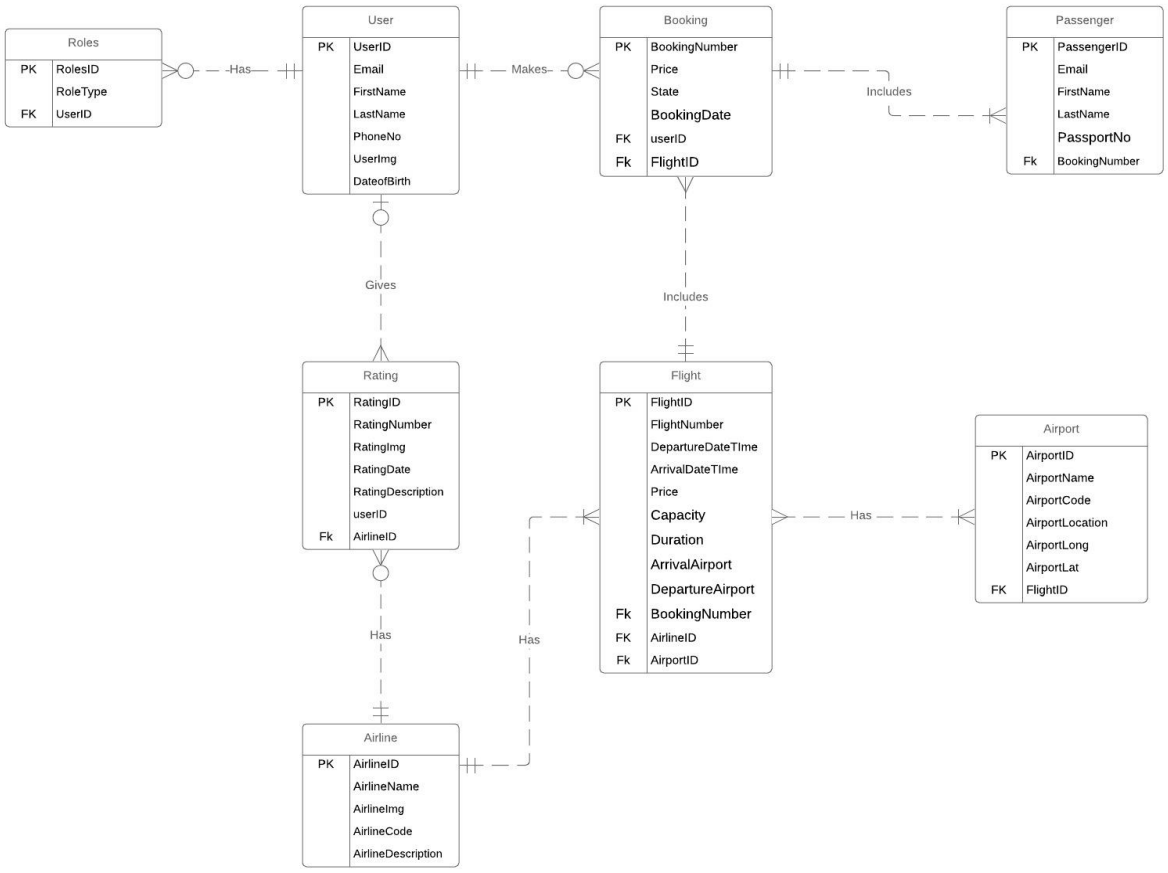
5. Checklist of site functionality

1. (Layout Page)	**TICK if complete**
Good Design	x
Stylesheet	x
JavaScript	x
Menu	x
2. (Home page)	
Design and content	x
Banner Image	x
3. (User Log in)	
Web form and validation controls	x
Formatted data entry display	x
Overall page design	x
4. (Customised Views and Controllers)	
Customised Views	x
Customised Controllers	x
Other customisations	x
5. (Documentation)	
Code Comments	x
Attribution of Source of any code used	x
6 Business Requirements	
BR(A1): for C to C+	x
BR(A2): for C to C+	x
BR(B1): for C to C+	x
BR(B2): for C to C+	x
BR(C1): for C+ to C++	x
BR(C2): for C+ to C++	x
BR(C3): for C+ to C++	x
BR(D1): for D to D++	x
BR(D2): for D to D++	x
BR(D3): for D to D++	x
BR(D4): for D to D++	x
BR(E1): for HD to HD+	x
BR(E2): for HD to HD+	x
BR(E3): for HD to HD+	x
BR(E4): for HD to HD+	x
BR(E5): for HD to HD+	x
Audit	
No breaking of copyright	x

6. **Your selected approach when constructing the application.**

For constructing the application, I used Model First approach. This approach was used because I found it easier than the code first approach, as all my controllers and models would generate automatically, as well as my database. I avoided using the database first approach because if I had to update my database, I would have to drop my models and change my controllers and views to reflect the change in the database, this would be tedious. Therefore, I chose to go with the model first approach.

7. **Class Diagram or Entity Relation Diagram**



8. Data dictionary

Entity Name	Attributes	Description	Data Type & Length	Example
User	UserID	Unique user identifier	nvarchar(128)	16cfafb0-5bd8-48f5-8347-1dc89ffec2e7
	Email	User Email	NVARCHAR (256)	sheridangomes@ymail.com
	FirstName	User first name	NVARCHAR (MAX)	sheridan
	LastName	User last name	NVARCHAR (MAX)	gomes
	PhoneNo	Phone number of the user	NVARCHAR (MAX)	423143299
	DateOfBirth	Date of birth of the user	DateTime	21/09/1995
	UserImg	User profile image	NVARCHAR (MAX)	Sherry_img.jpg
Booking	BookingNumber	Unique booking identifier	INT	1001
	Price	Price of the booking	NVARCHAR (MAX)	250
	State	State of the booking	NVARCHAR (MAX)	Confirmed or pending
	BookingDate	Date of the booking	DateTime	13/10/2109
Passenger	PassengerID	Unique passenger identifier	Int	1001
	Email	Email of the passenger	NVARCHAR (256)	sheridangomes@ymail.com
	FirstName	First name of the passenger	NVARCHAR (MAX)	Sheridan

	lastName	Last name of the passenger	NVARCHAR (MAX)	Gomes
	PassportNo	Passport number	NVARCHAR (MAX)	AU32450
Flight	FlightID	Unique flight identifier	Int	1001
	FlightNumber	Flight number for the flight	NVARCHAR (MAX)	VA342
	DepartureDateTIme	Departure date and time for the flight	Datetime	20/09/2019 6:00:00
	ArrivalDateTime	Arrival date and time for the flight	Datetime	20/09/2019 7:00:00
	Price	Price for flight	NVARCHAR (MAX)	230
	Capacity	Capacity available on the flight	Int	200
	ArrivalAirport	Arrival airport name	NVARCHAR (MAX)	Sydney
	DepartureAirport	Departure airport name	NVARCHAR (MAX)	Melbourne
	Duration	Duration of the flight	NVARCHAR (MAX)	1 hour
Airport	AirportID	Unique Airport identifier	Int	1001
	AirportName	Airport name	NVARCHAR (MAX)	Kingford airport
	AirportCode	Airport code	NVARCHAR (MAX)	SY05
	AirportLocation	Location of the airport	NVARCHAR (MAX)	Sydney
	AirportLong	Airport Longitude	NVARCHAR (MAX)	-34.09

	AirportLat	Airport Lattitude	NVARCHAR (MAX)	147.09
Airline	AirlineID	Unique airline identifier	Int	1001
	AirlineName	Name of the airline	NVARCHAR (MAX)	Virgin airlines
	AirlineImg	Image of the airline	NVARCHAR (MAX)	virginAirline.jpg
	AirlineCode	Code of the airline	NVARCHAR (MAX)	VA
	AirlineDescription	Airline description	NVARCHAR (MAX)	Virgin airlines provides flights to domestic locations
Rating	RatingID	Unique rating identifier	Int	1001
	RatingNumber	Rating number	NVARCHAR (MAX)	4
	RatingImg	Image of the rating	NVARCHAR (MAX)	Rating_star.jpg
	RatingDate	Date of the rating	NVARCHAR (MAX)	20/09/2019
	RatingDescription	Description of the rating	NVARCHAR (MAX)	Great airline, good service
Roles	RolesID	Unique Role identifier	Int	1
	RoleType	Role type	NVARCHAR (256)	Admin

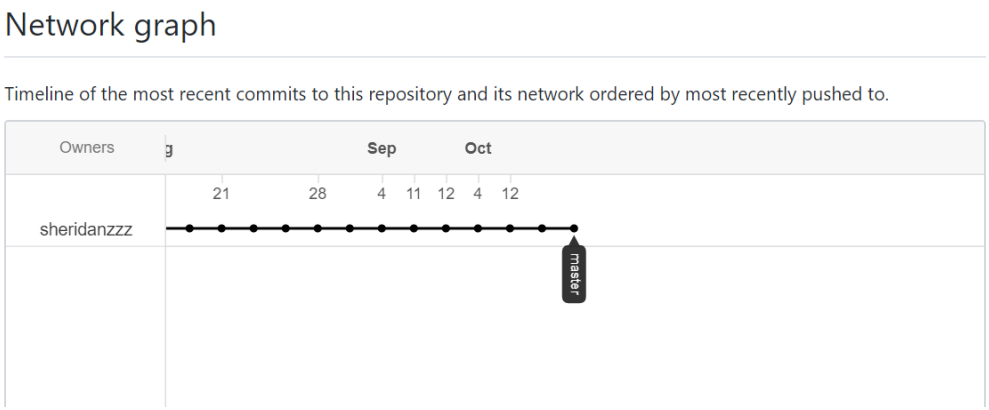
9. Development Methodology

The approach used for developing the application was code and fix method. Code and fix is a simple methodology, which consists of coding and fixing in a cyclic manner. This approach fits with my agile approach to developing the application, as I can iterate each sprint by coding and fixing the bugs at the end of the sprint cycle. Code and fix is very convenient for small projects as it's a time-saver and therefore its often used for low budget projects. I picked this approach in part because it gives

me flexibility in managing time and approach to meeting the business requirements as I was working on the assignment on my own.

10. **Versioning**

The versioning of this project was handled using Git. Using github.com and Gitkraken as a client to upload files on to github.com. Using Git was helpful as I could keep my application up to date on the go and I can also use its as a back up for my code in case something goes wrong with my implementation. For instance during the semester break I had a issue with my model that nearly crashed my application, but since I had a version uploaded on github I could get the working version back and that helped me save a lot of time with my implementation. Image below shows constant git commits as I have been using git throughout the semester.



References:

Images in home page:

Sydney: https://unsplash.com/s/photos/sydney

Alice Springs: https://unsplash.com/s/photos/alice-springs

Gold coast: https://unsplash.com/s/photos/gold-coast

Great ocean road: https://unsplash.com/s/photos/great-ocean-road

Logo: https://unsplash.com/s/photos/plane

Background Image: https://unsplash.com/s/photos/clouds

Star rating image: https://img.pngtube.com/myfile/small/125-1259472_on-rating-systems-1-1-2-out-of.png

Airline Logos:

Virgin AU: https://i.pinimg.com/originals/86/2d/fa/862dfabab54a64c065745c62a862f29b.png

Qantas: https://www.stickpng.com/img/icons-logos-emojis/iconic-brands/qantas-logo

Jetstar: https://content.presspage.com/clients/o_1183.png

API's Used:

Chart:

CanvasJS: https://canvasjs.com/javascript-charts/

Email:

Sendgrid: https://github.com/sendgrid/sendgrid-csharp

Maps:

https://www.mapbox.com

DatePicker:

https://eonasdan.github.io/bootstrap-datetimepicker/

PDF generator: https://rotativa.io/

Bootstrap: https://bootswatch.com/3/yeti/#buttons

Rich text editor: https://www.tiny.cloud

Email template: https://stripo.email/templates/