TEC | Tecnológico de Costa Rica

Instituto Tecnológico de Costa Rica

Escuela de ingeniería en computadores

Profesor: Marco Rivera Meneses

Curso: Bases de datos

Grupo 1

Estudiantes:

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Proyecto I - TECAir

Documentación Técnica

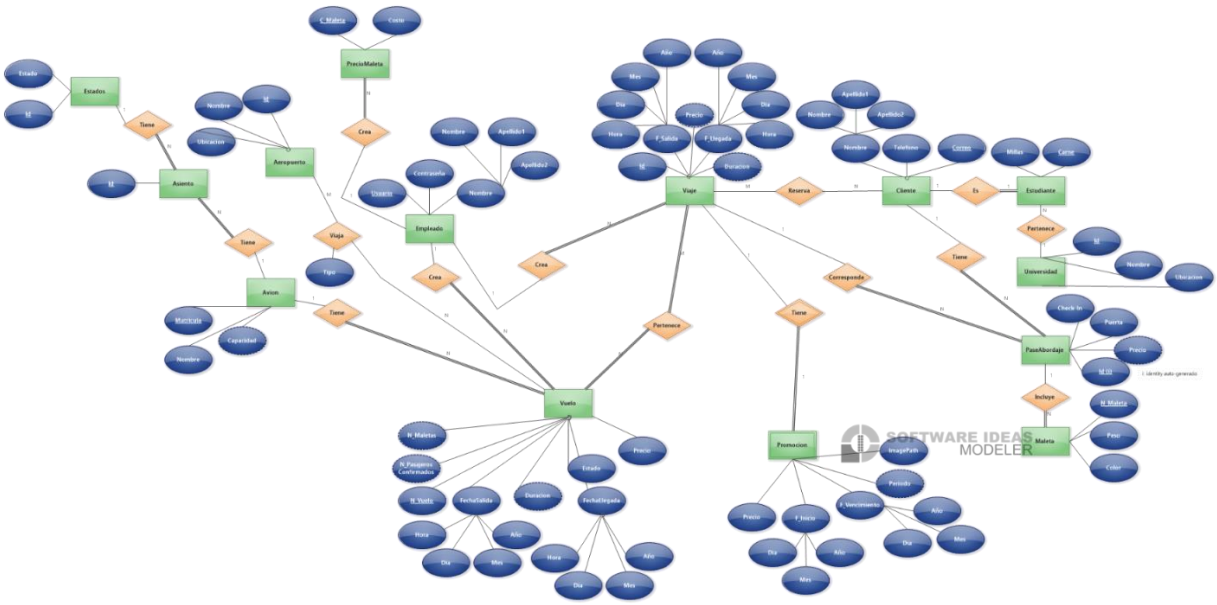
II Semestre, 2023

Tabla de contenidos

Source Code from the repository

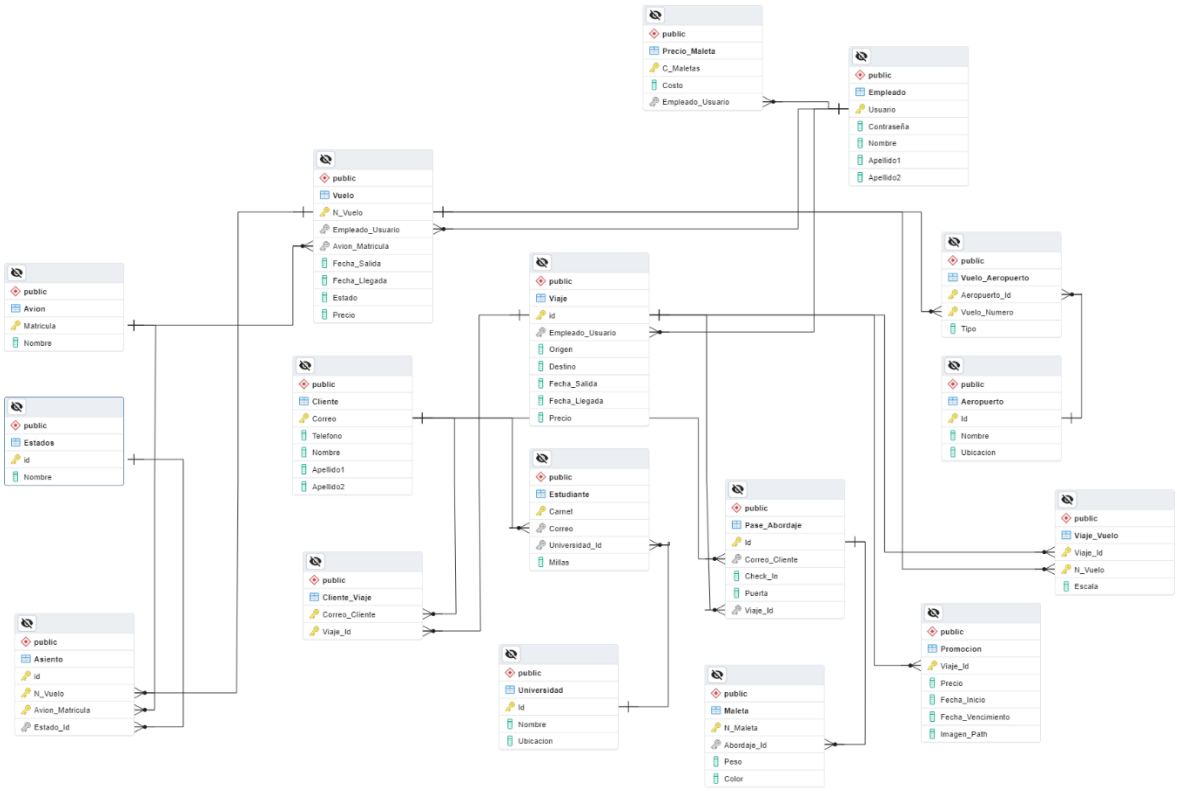
GitHub repository link: [PipoDataBase/TECAir (github.com)]

Cocnceptual Model



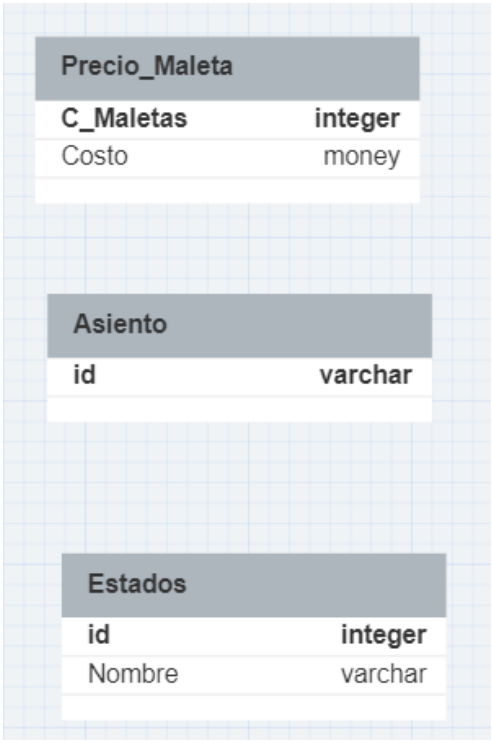
Note: This is the final version of the conceptual model used for the project.

Relational model



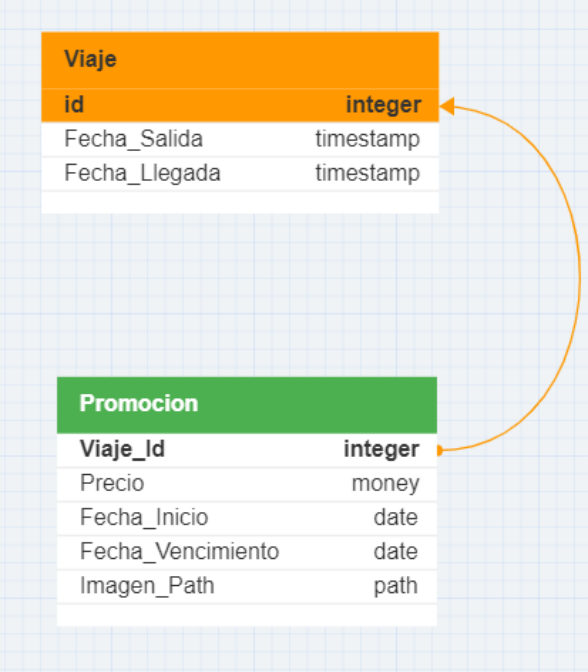
Mapping steps:

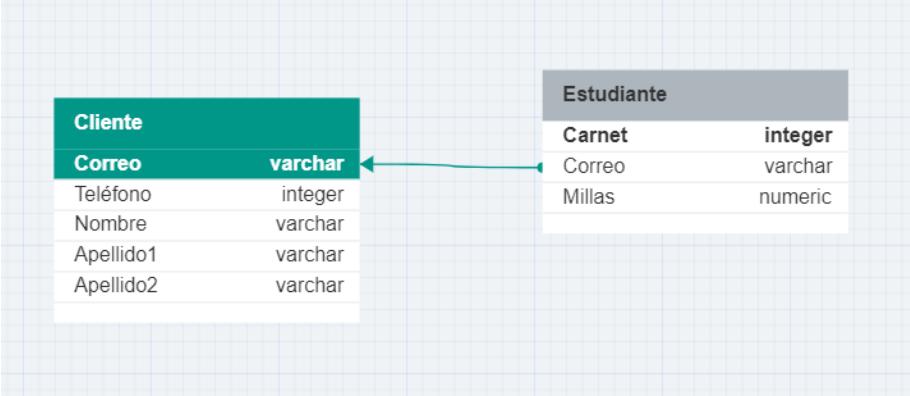
Strong Entity Maping:



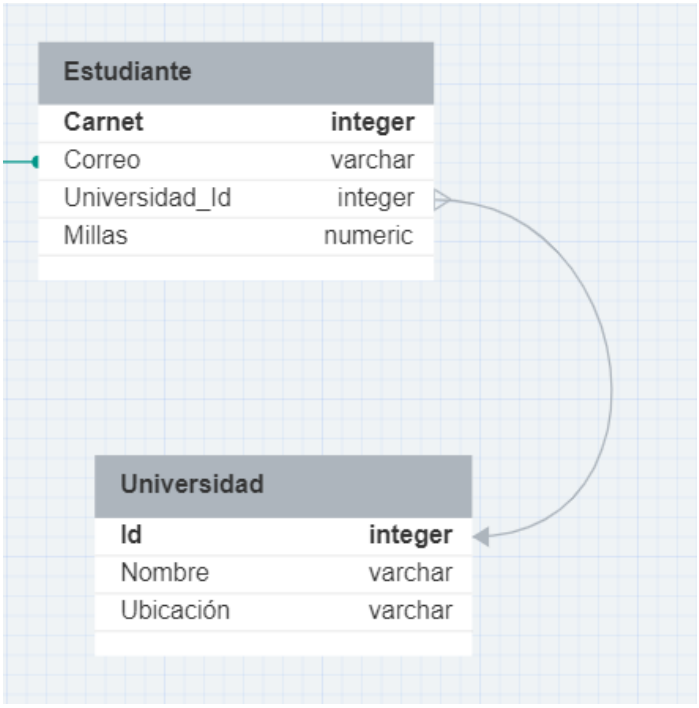
Weak Entity Maping:

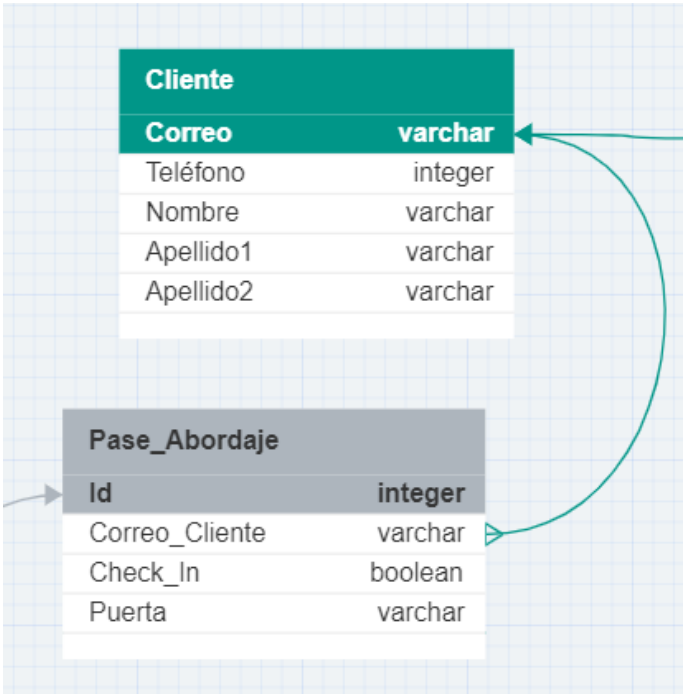
1:1 Entity Relation Maping:

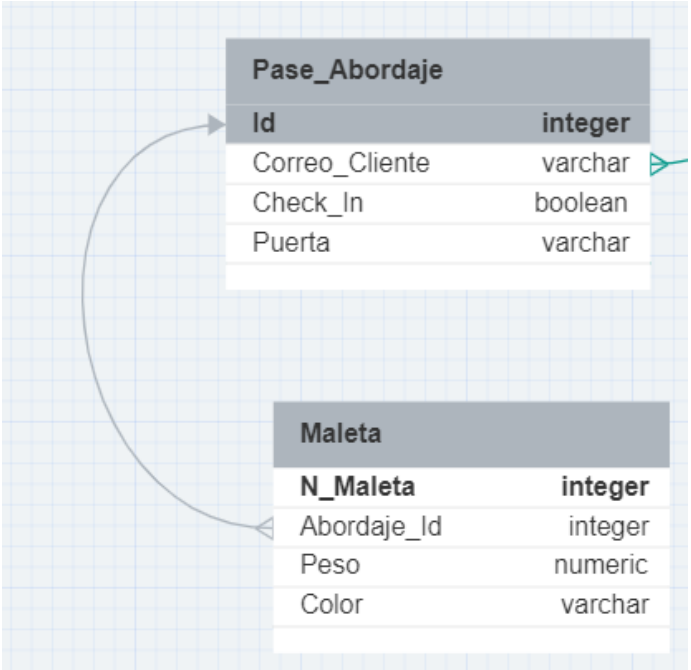


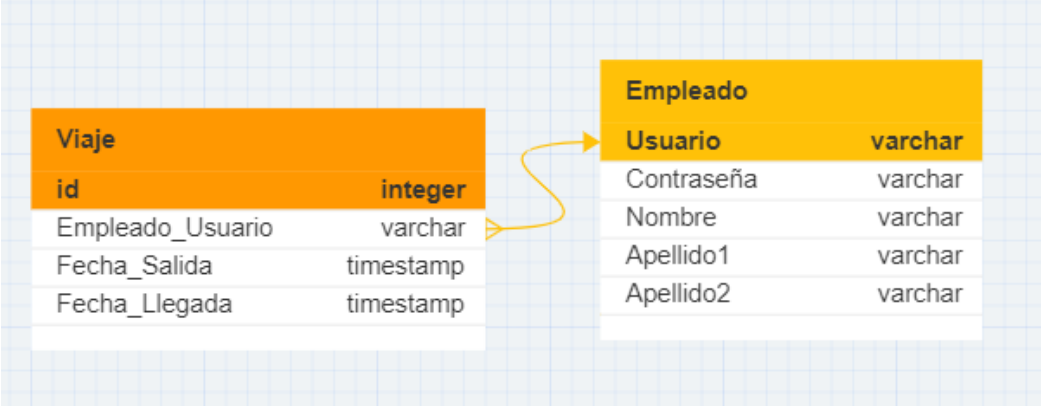


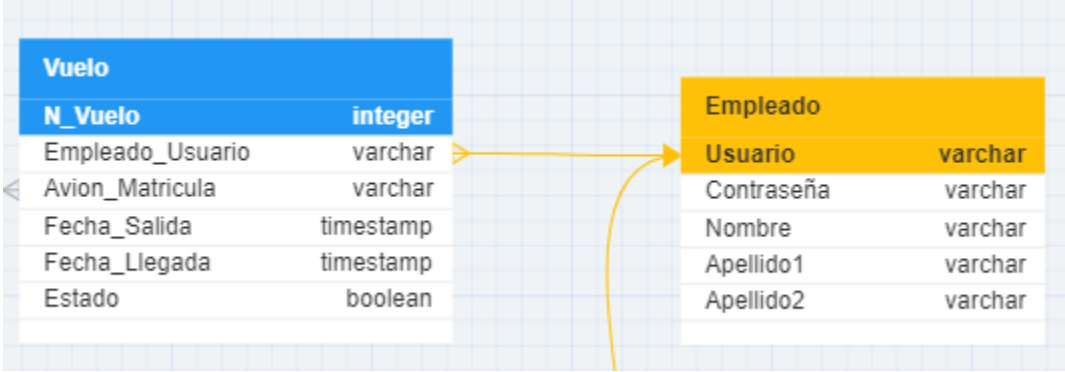
N:1 Entity Relation Maping:

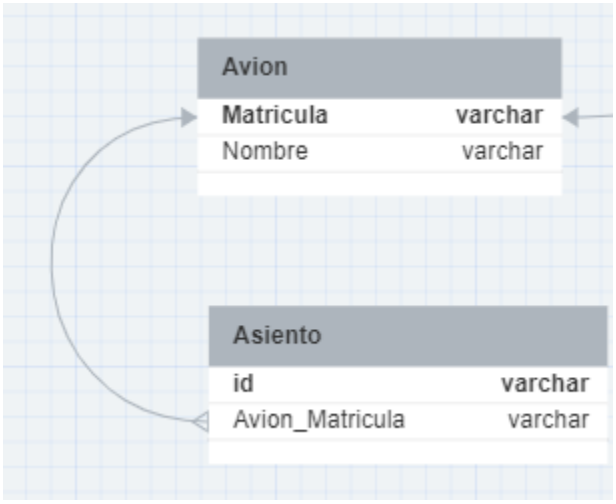


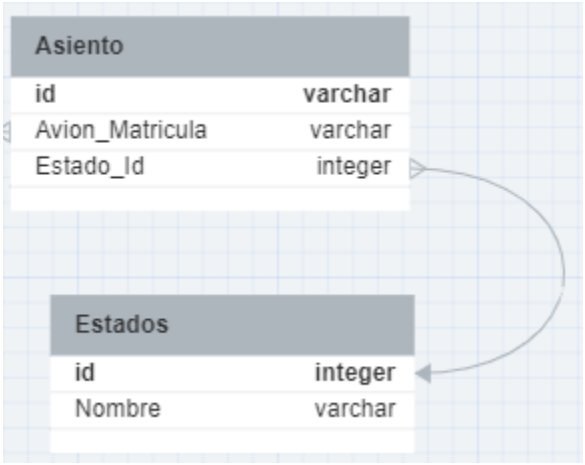


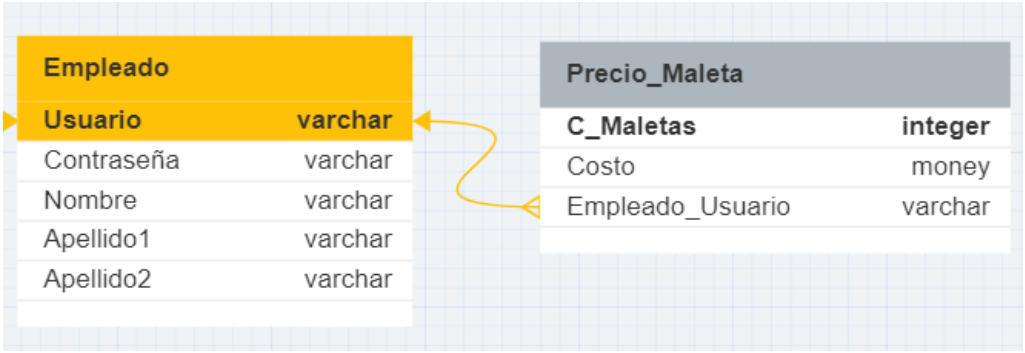

Pase_Abordaje
Id integer
Correo_Cliente varchar
Check_In boolean
Puerta varchar
Maleta
N_Maleta integer
Abordaje_Id integer
Peso numeric
Color varchar


Viaje
id integer
Empleado_Usuario varchar
Fecha_Salida timestamp
Fecha_Llegada timestamp
Empleado
Usuario varchar
Contraseña varchar
Nombre varchar
Apellido1 varchar
Apellido2 varchar

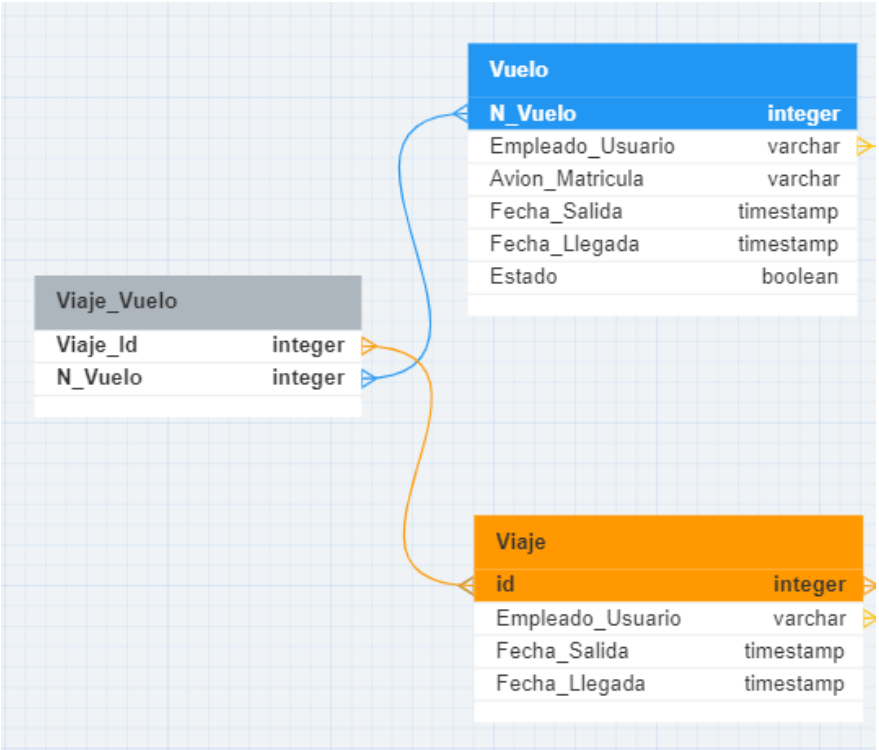

Vuelo
N_Vuelo integer
Empleado_Usuario varchar
Avion_Matricula varchar
Fecha_Salida timestamp
Fecha_Llegada timestamp
Estado boolean
Empleado
Usuario varchar
Contraseña varchar
Nombre varchar
Apellido1 varchar
Apellido2 varchar

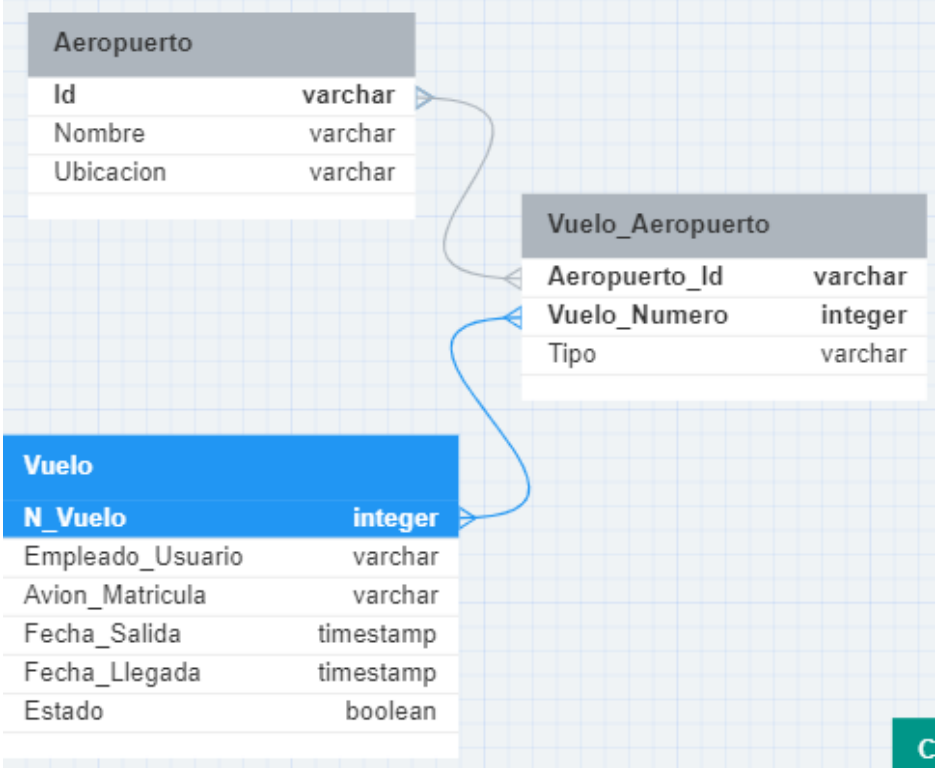

Avion
Matricula varchar
Nombre varchar
Asiento
id varchar
Avion_Matricula varchar

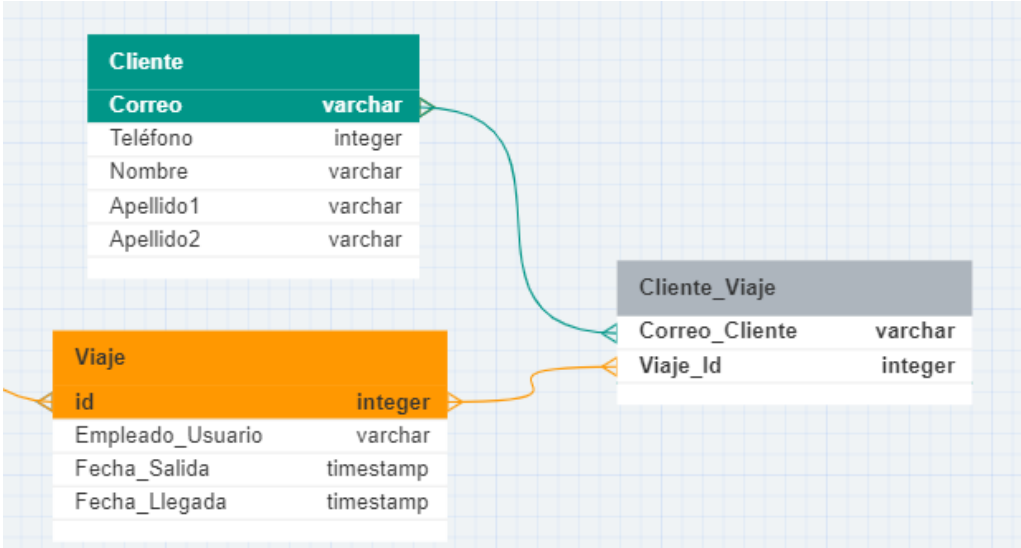

Asiento
id varchar
Avion_Matricula varchar
Estado_Id integer
Estados
id integer
Nombre varchar


Empleado
Usuario varchar
Contraseña varchar
Nombre varchar
Apellido1 varchar
Apellido2 varchar
Precio_Maleta
C_Maletas integer
Costo money
Empleado_Usuario varchar

N:N Entity Relation Maping:







Data structures developed

- **Viaje**

This relation from the database holds the core information about a travel, from the employee who made the trip, up to the price of buying that ticket.

Atribute	Values
(Integer) id	The id of the travel
(String) Empleado_Usuario	The employee that added the travel to the database
(String) Origen	The origin airport for the travel
(String) Destino	The Destiny airport for the travel
(TimeStamp) Fecha_Salida	Date for the travel departure
(TimeStamp) Fecha_Llegada	Date for the travel arrival

(Money) Precio	**Price of the travel**

- **Vuelo**

This relation from the database holds the core information about a specific flight, like the plane that is going to fly, or the price of said flight.

Atribute	Values
(Integer) N_Vuelo	**Flight number used to identify each one**
(String) Empleado_Usuario	**Employee that added the flight**
(String) Avion_Matricula	**The registration of the airplane that is making the flight**
(TimeStamp) Fecha_Salida	**Date for the flight departure**
(TimeStamp) Fecha_Llegada	**Date for the flight arrival**
(boolean) Estado	**State of the flight**
(Money) Precio	**Price of the flight**

- **Empleado**

This relation holds the core information about an employee, like the username or the full name of said employee.

Atribute	Values

(String) Usuario	**Username of the employee**
(String) Contraseña	**Password of the employee**
(String) Nombre	**Name of the employee**
(String) Apellido1	**Lastname of the employee**
(String) Apellido2	**Second lastname of the employee**

- **Cliente**

This relation holds the core information about a client, like the email or the full name of said client.

Atribute	Values
(String) Correo	**Email of the client**
(Integer) Telefono	**Phone number of the client**
(String) Nombre	**Name of the client**
(String) Apellido1	**Lastname of the client**
(String) Apellido2	**Second lastname of the client**

- **Pase_Abordaje**

This relation holds the relevant information of the boarding pass to a plane, it saves the email from the client that bought the ticket, it shows the airport gate from where the flight is going to departure between other values.

Atribute	Values
(Integer) Id	Boarding pass id to identify each one
(String) Correo_Cliente	Email of the client that bought the pass
(Boolean) Check_In	State of the boarding pass
(String) Puerta	The airport gate where the travel is going to depart
(Integer) Viaje_Id	Id of the travel bought

- **Promocion**

This relation holds the relevant information about a promotion of a travel, it information like the travel id or the price of the promotion.

Atribute	Values
(Integer) Viaje_Id	Id of the travel associated with the promotion
(Money) Precio	Price of the promotion, usually lower than the travel
(Date) Fecha_Inicio	Date for the start of the promotion
(Date) Fecha_Vencimiento	Date for the end of the promotion
(String) Imagen_Path	Path to the image related to the promotion

- **Aeropuerto**

This relation holds the information about the airports that the airline have flights, it saves the IATA code from the airport, location and name of the airport

Atribute	Values
(String) Id	IATA code of the airport
(String) Nombre	Full name of the airport
(String) Ubicacion	Geographical location of the airport

- **Estudiante**

This relation holds information about a client that is also a student, like the identification of the university or the amount of miles that the student has flighted

Atribute	Values
(Integer) Carnet	Student identification related to each university
(String) Correo	Email from the client that is a student
(Integer) Universidad_Id	Id of the university in the DB
(Numeric) Millas	Miles that the client has accumulated

- **Avion**

This relation holds the relevant information about the airplanes of the airline, like the plane registration and the name of each airplane.

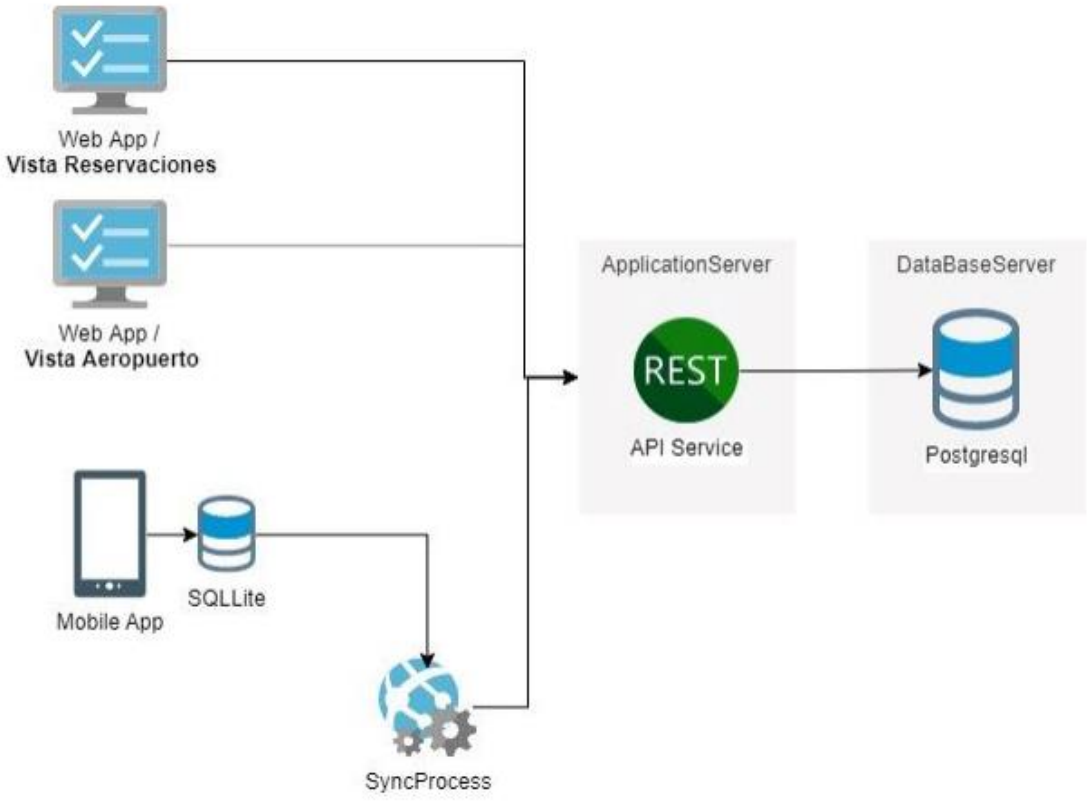
Atribute	Values
(String) Matricula	The plane registration number
(String) Nombre	The name of the airplane

- **Maleta**

This relation holds information about the luggage of a client, like the number of the luggage or the boarding pass its related to.

Atribute	Values
(Integer) N_Maleta	Number of the luggage
(String) Abordaje_Id	The boarding pass id related to the luggage
(numeric) Peso	Weight of the luggage in kg
(String) Color	Color of the luggage bag

Descripción de la arquitectura implementada



Found problems

- There is a known problem in the mobile app side, for the promotions saved in the SQLite database, at the time of retrieval of promotions from the integrated DB when offline it reads the information from the table, loads objects in a variable that is used, but said object is full of undefined objects. There are some possible reasons for this undefined object, the main suspect is the asynchronous function that makes the SQLite query that retrieves the promotions from the database but every call and async function is within surrounded by try and catch statements to minimize information loss.

Teamwork evidences

Objectives and goals

Como parte de la elaboración del proyecto final, el equipo de trabajo deberá realizar la entrega de los siguientes documentos y entregables:

1. Plan de trabajo.
2. Modelo conceptual de la base de datos.
3. Modelo relacional de la base de datos.
4. Scripts creacionales de la base de datos.
5. Scripts de población de la base de datos.
6. Diagrama de clases del proyecto.
7. Diagrama de arquitectura del proyecto.
8. Avance ejecutivo I.
9. Avance ejecutivo II.
10. Documentación técnica.
11. Manual de instalación.
12. Manual de usuario.
13. Rest API.
14. Aplicación web: Aeropuertos
15. Aplicación web: Usuarios
16. Aplicación móvil.

Work roles

- DBA: Se encarga de aprobar los cambios que se vayan a realizar a la base de datos y autoriza los accesos a la misma.
- DBD: Diseña la base de datos tomando en cuenta el mini mundo y las relaciones que este conlleva.
- Front-End: Diseña y desarrolla las vistas de la página web y aplicación móvil.

- Back-End: Diseña y desarrolla el funcionamiento del Rest API para conectar los sistemas necesarios.

Rules

1. Presentar los avances individuales al equipo de trabajo en intervalos de máximo 4 días.
2. Mantener una comunicación activa con el equipo de trabajo por los medios acordados.
3. Ser puntual con las reuniones programadas por el equipo y en caso de no poder asistir, leer las minutas y bitácora de la reunión.
4. Echarnos un futbolín al menos una vez por semana.

Nota: El incumplimiento de las reglas anteriormente descritas supondrá un castigo o inclusive la expulsión del grupo de trabajo.

Cronograma y avance del proyecto

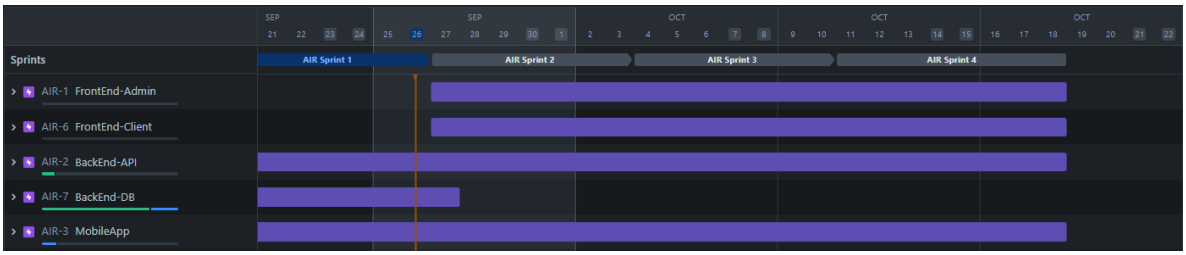
Para la distribución de las cargas de trabajo y la definición de las fechas pertinentes para cada uno de los entregables y tareas para la elaboración del prototipo final, se utilizará Jira como el software que registrará el progreso del trabajo realizado y los avances entregados por los integrantes del grupo.

Enlace al repositorio de Jira:

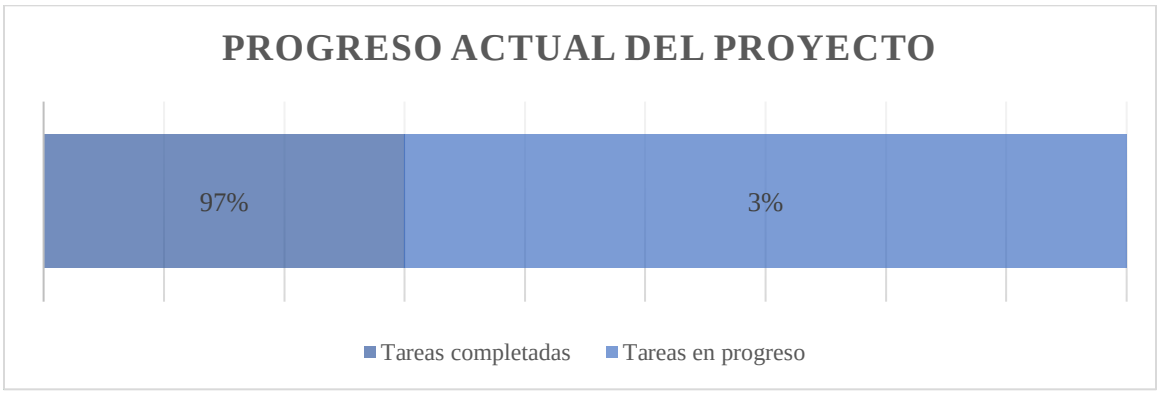
Repositorio de Jira: TECAir

Nota: Para la visualización de la organización de tareas y el trabajo en equipo es necesario solicitar el acceso al repositorio de Jira.

A continuación, se muestra una vista del cronograma de trabajo inicial accesible en el repositorio de Jira:



Además, en el siguiente gráfico encontrará una evaluación correspondiente al progreso actual del proyecto, basado en las tareas completadas por el equipo de trabajo.



Minutas de reuniones

Reunión 1:

Fecha y hora de la reunión: 9/24/2023, 6:00 p.m.

Integrantes presentes: Emanuel Marín, Jose Andrés Rodríguez, Sebastián Chen y Óscar Soto.

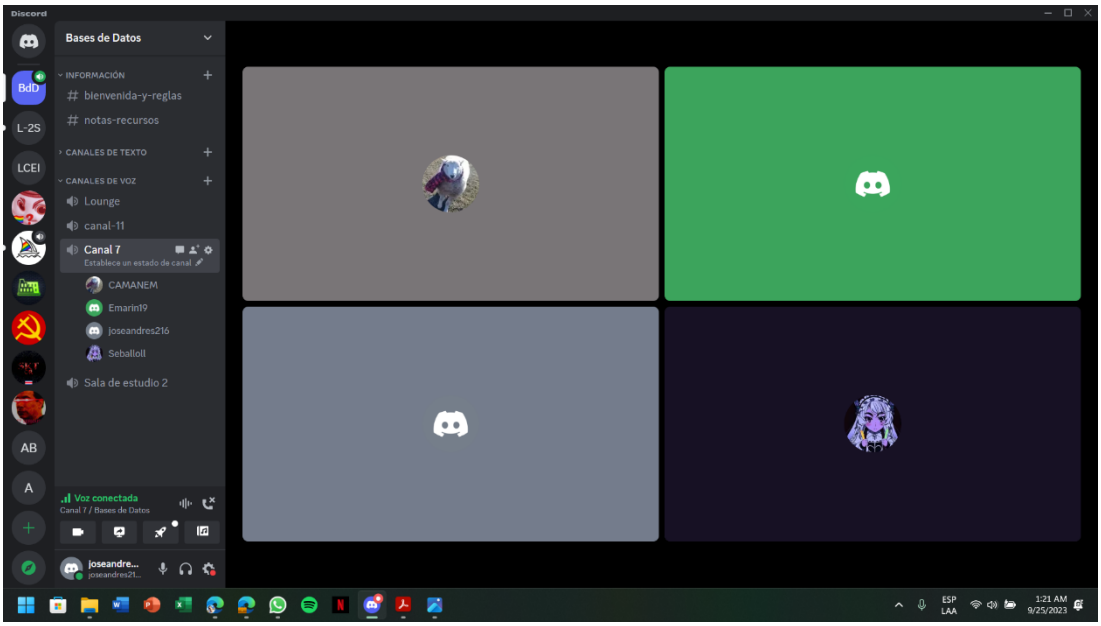
Agenda de la reunión:

1. Revisión de modelos conceptuales
2. Elaboración del modelo relacional
3. Elaboración del plan de trabajo

Minuta de la reunión realizada:

- Se revisaron los modelos conceptuales y se detalló un modelo conceptual
- Se mapeó y determinó un modelo relacional
- Se elaboraron los scripts creacionales de la base de datos necesaria para el proyecto
- Se creó una base de datos y se conectó al Rest API

Evidencia de reunión:



Reunión 2:

Fecha y hora de la reunión: 9/29/2023, 9:00 p.m.

Integrantes presentes: Emanuel Marín, Jose Andrés Rodríguez, Sebastián Chen y Óscar Soto.

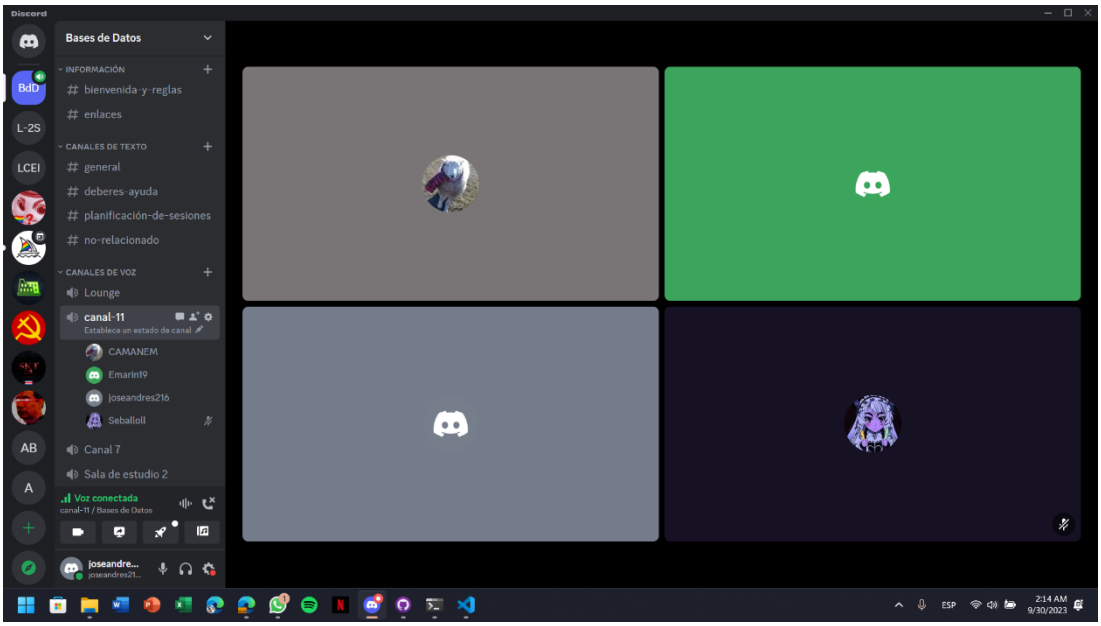
Agenda de la reunión:

1. Exponer avances del front-end, Ionic3 y SQLite
2. Establecer un formato para la vista general del front-end
3. Distribuir las vistas del front-end client

Minuta de la reunión realizada:

- Se expusieron los avances realizados en los ambitos de front-end, Ionic3 y SQLite
- Se diseñó un prototipo para las vistas generales que posee el front-end
- Se inició el sprint de la segunda semana
- Se distribuyeron algunas vistas del front-end client
- Se codificó el routing del front-end client

Evidencia de reunión:



Reunión 3:

Fecha y hora de la reunión: 10/1/2023, 8:00 p.m.

Integrantes presentes: Emanuel Marín, Jose Andrés Rodríguez, Sebastián Chen y Óscar Soto.

Agenda de la reunión:

Log entry #1: Repasar los avances individuales de cada integrante

Log entry #2: Actualizar el repositorio de Jir

Minuta de la reunión realizada:

- Se revisaron los avances de cada integrante
- Se completaron las tareas de Jira ya desarrolladas
- Se asignaron nuevas tareas a los integrantes del equipo

Reunión 4:

Fecha y hora de la reunión: 10/3/2023, 7:00 p.m.

Integrantes presentes: Emanuel Marín, Jose Andrés Rodríguez, Sebastián Chen y Óscar Soto.

Agenda de la reunión:

Log entry #1: "Revisión de avances individuales

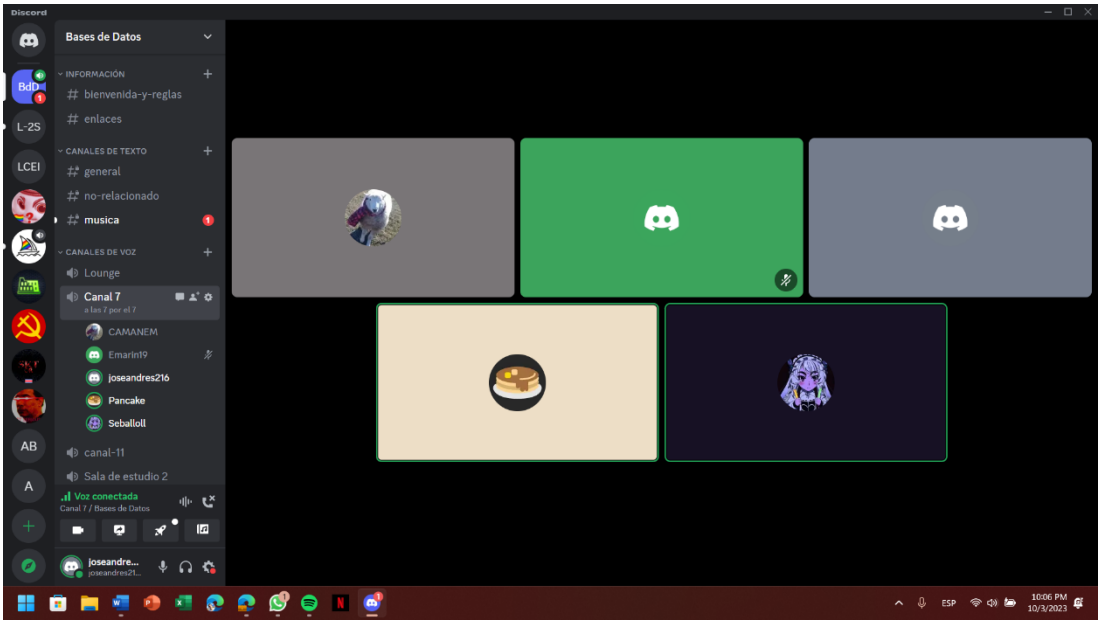
Log entry #2: Actualización del repositorio de Jira

Log entry #3: Elaboración del documento para el avance ejecutivo I"

Minuta de la reunión realizada:

- Se revisaron los avances hechos por cada integrante del equipo
- Se completaron las tareas ya desarrolladas en el repositorio de Jira
- Se cerró el sprint establecido para el periodo del 27 de septiembre al 3 de agosto
- Se asignaron nuevas tareas a cada integrante
- Se inició el sprint establecido para el periodo del 4 al 10 de agosto
- Se elaboró y entregó el documento del avance ejecutivo I

Evidencia de reunión:



Activity log

Log entry #1:

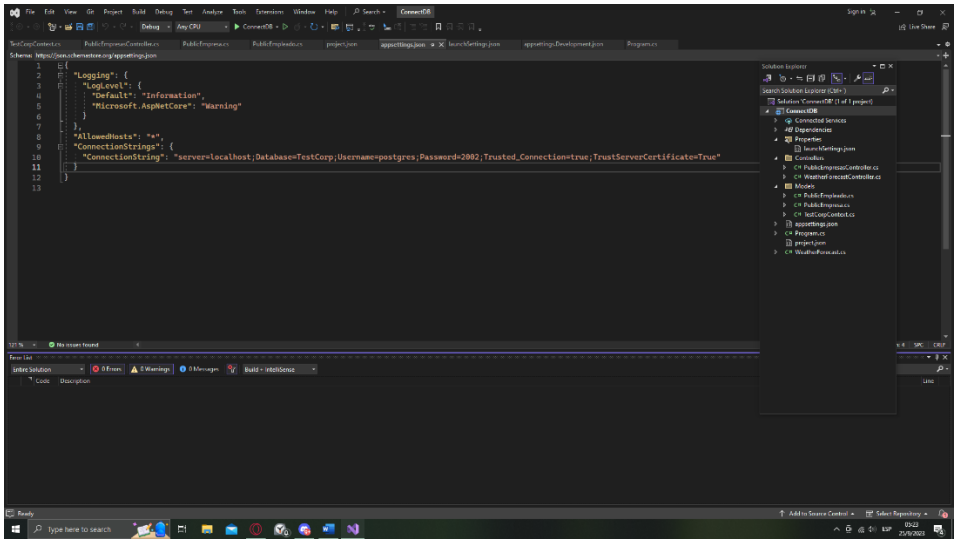
Date and time of entry: 9/23/2023 11:00 p.m

Participating members: Óscar Soto

Performed activities:

- It was possible to learn how to create a database in PostgreSQL and export it to the API. In addition to generating the rest of your drivers using Scaffolding

Evidence of work:



Log entry #2:

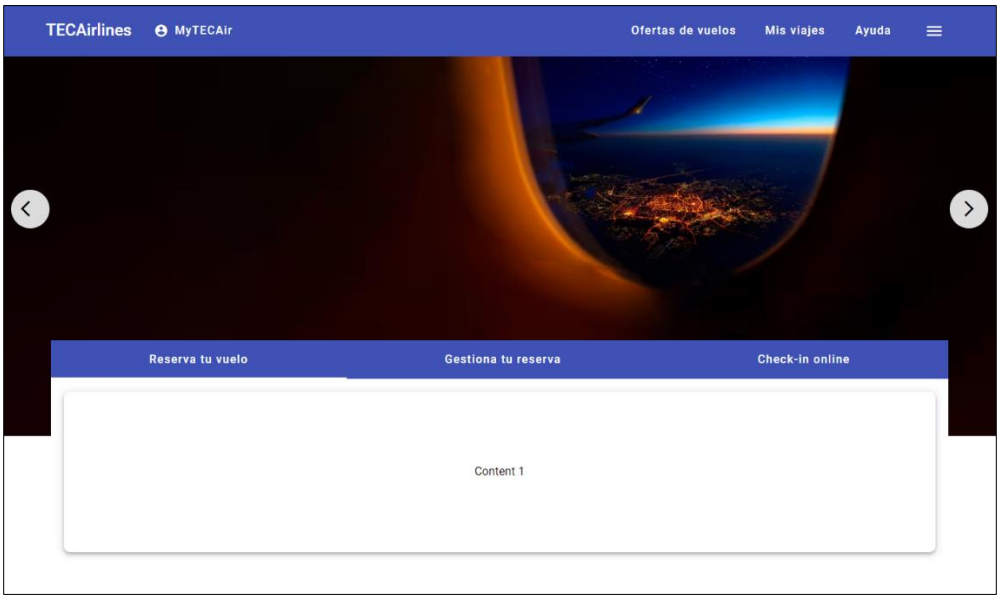
Date and time of entry: 9/28/2023 3:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- I worked on an initial and basic view of the client-view or reservation view taking as an example the Avianca page https://www.avianca.com/cr/es/, I made it Responsive also thinking about the Mobile App

Evidence of work:



Log entry #3:

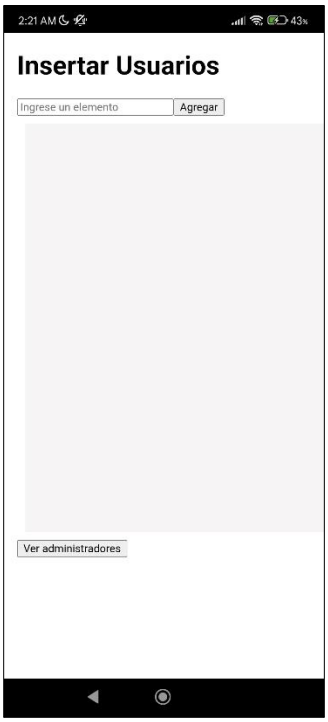
Date and time of entry: 9/28/2023 1:00 p.m.

Participating members: Jose Andrés Rodríguez

Performed activities:

- Researched SQLite for an Ionic project
- An example of an Angular project exported to Ionic with an SQLite database was developed

Evidence of work:



Log entry #4:

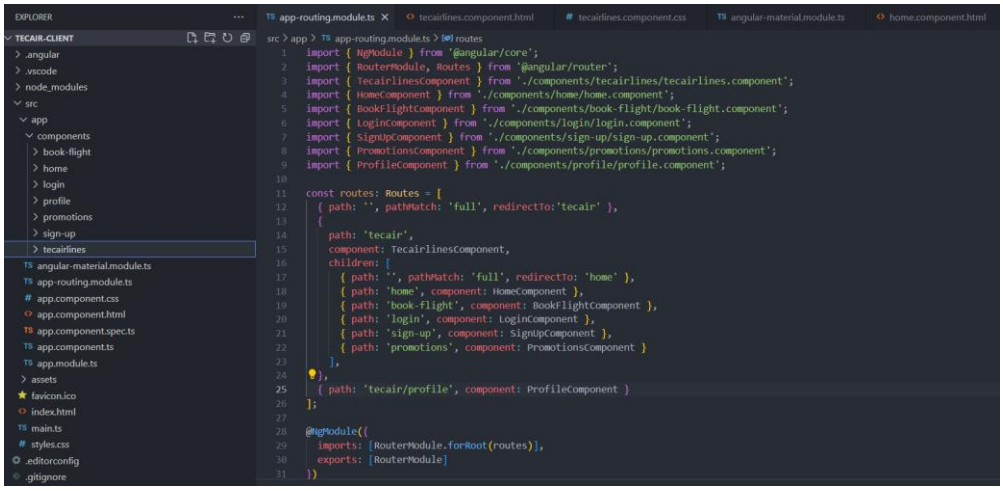
Date and time of entry: 9/30/2023 1:30 a.m.

Participating members: Emanuel Marín

Performed activities:

- I added some components and routing to these for the different views of TECAir Client

Evidence of work:



Log entry #5:

Date and time of entry: 9/30/2023 4:00 p.m.

Participating members: Jose Andrés Rodríguez

Performed activities:

- Created the first stepper view prototype

Log entry #6:

Date and time of entry: 9/28/2023 3:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- I worked on an initial and basic view of the client-view or reservation view taking as an example the Avianca page https://www.avianca.com/cr/es/, I made it Responsive also thinking about the Mobile App

Evidence of work:

Log entry #7:

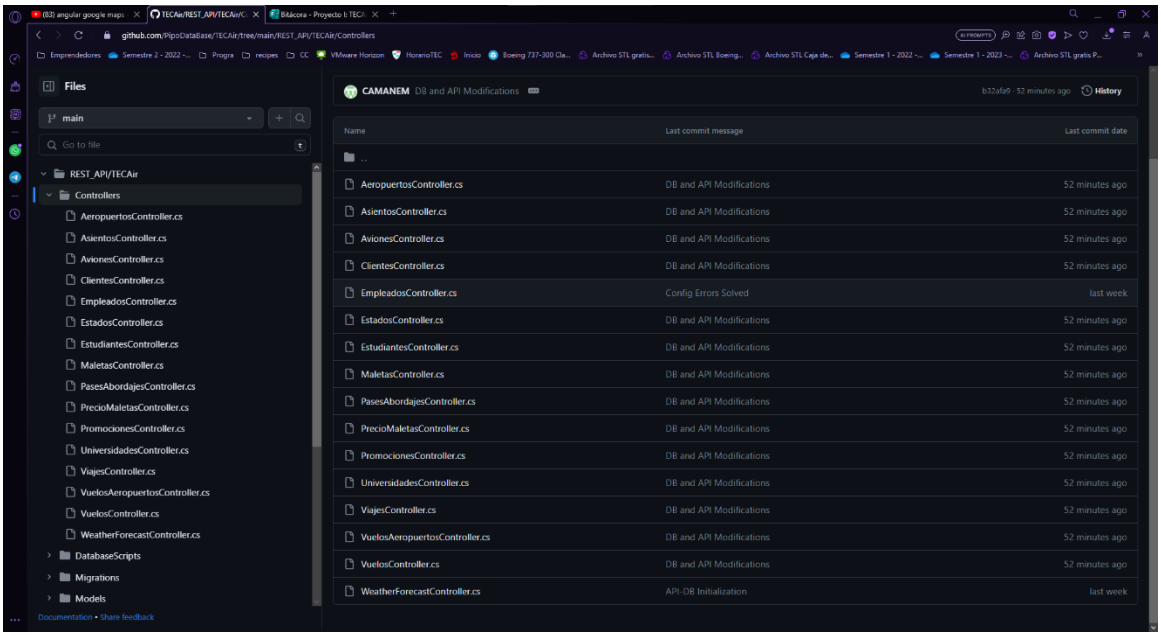
Date and time of entry: 10/1/2023 1:00 am.

Participating members: Óscar Soto

Performed activities:

- Modifications were made to the API and Database
- Added missing relationship and 2 entities to conceptual model
- All API drivers were generated

Evidence of work:



Log entry #8:

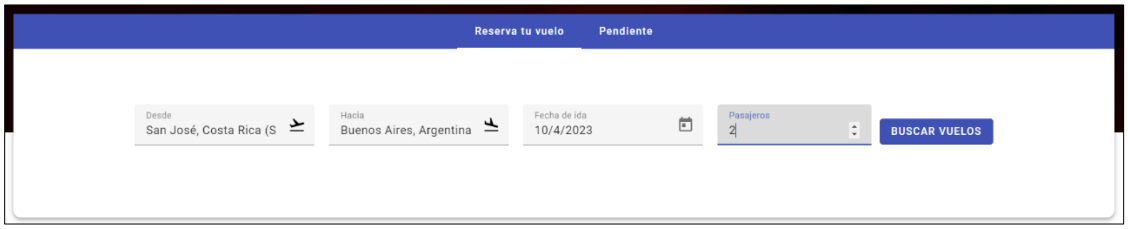
Date and time of entry: 9/30/2023 5:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- I worked on the "Book your flight" Tab. I added Autocomplete for airport selection. They are loaded from the REST Api

Evidence of work:



Log entry #9:

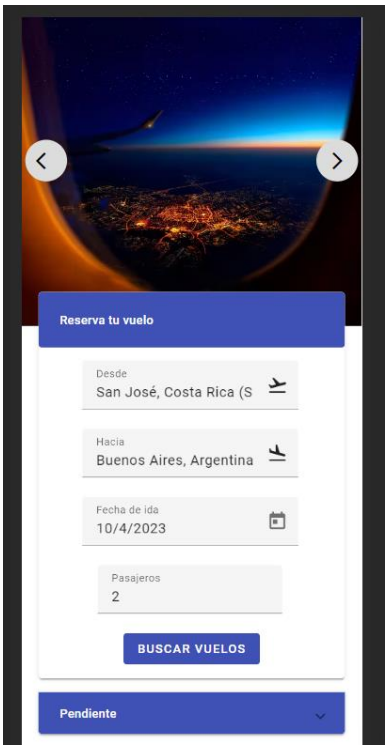
Date and time of entry: 9/30/2023 7:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- I converted the "Book your flight" tab into an expansion-panel to make the web app Responsive

Evidence of work:



Log entry #10:

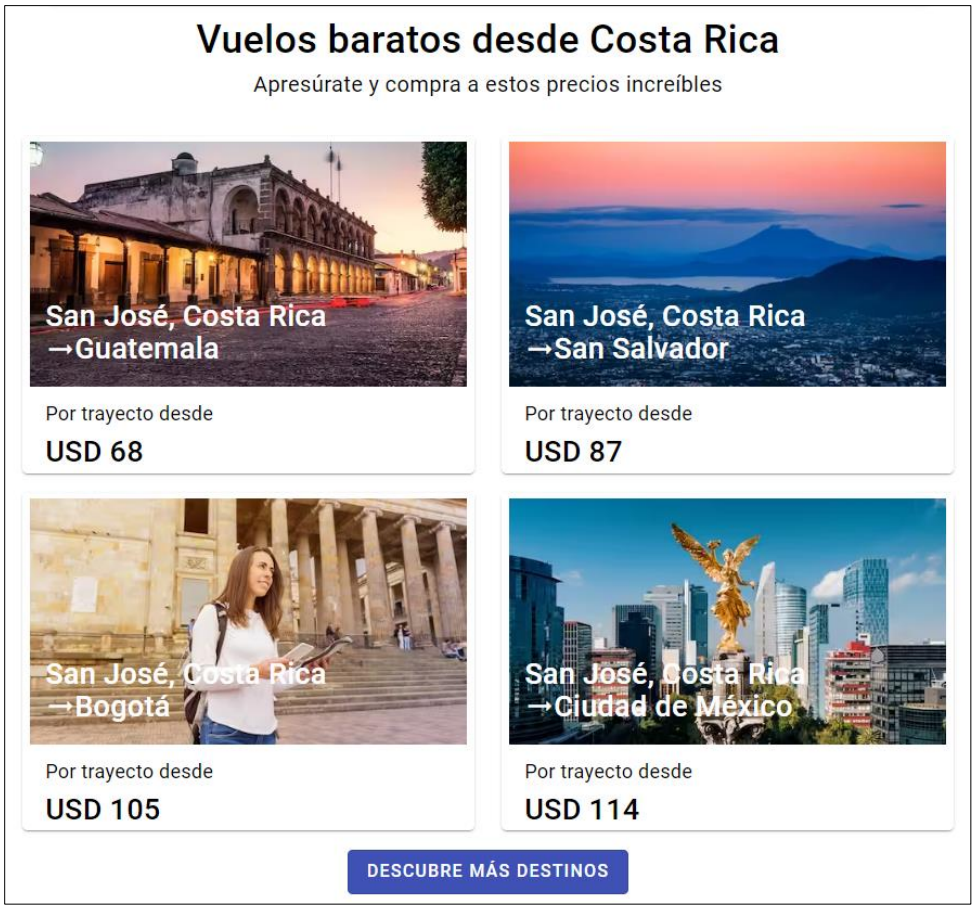
Date and time of entry: 9/30/2023 9:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- I added (for the moment in a burnt form), a format to see the 4 main TECAirlines promotions

Evidence of work:



Log entry #11:

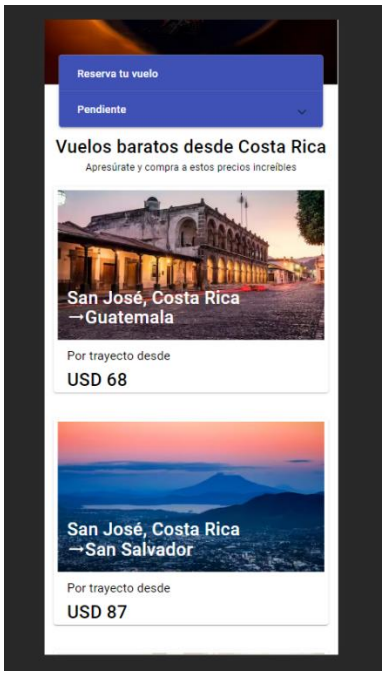
Date and time of entry: 9/30/2023 11:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- I also made the view of the 4 main promotions Responsive

Evidence of work:



Log entry #12:

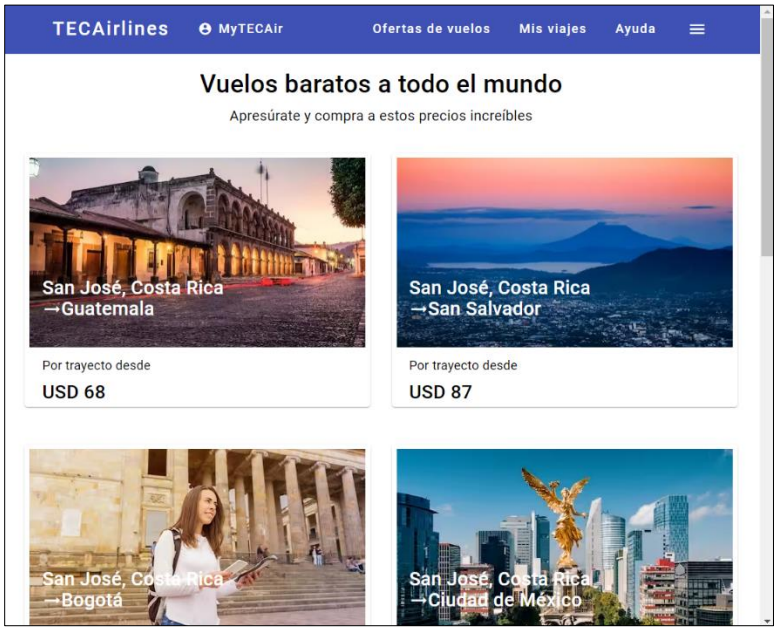
Date and time of entry: 10/1/2023 3:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- I added a view to display all TEC Airlines promotions

Evidence of work:



Log entry #13:

Date and time of entry: 10/1/2023 4:00 p.m.

Participating members: Jose Andrés Rodríguez

Performed activities:

- Developed the initial view of the stepper steps two and three.

Log entry #14:

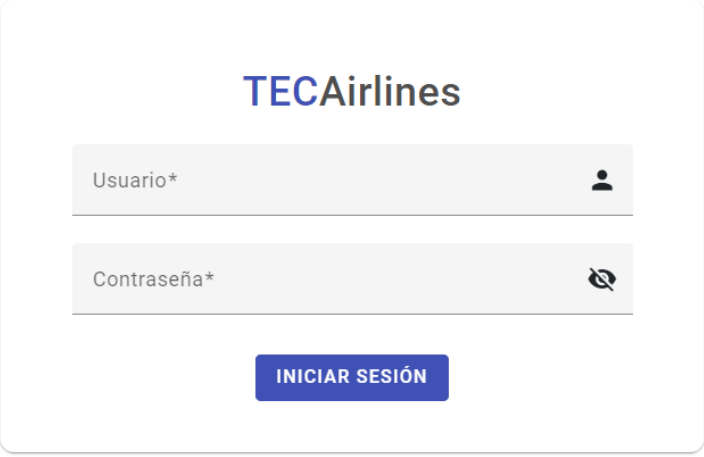
Date and time of entry: 10/1/2023 4:30 p.m.

Participating members: Emanuel Marín

Performed activities:

- I created the TECAir-Admin project and added the login view

Evidence of work:



Log entry #15:

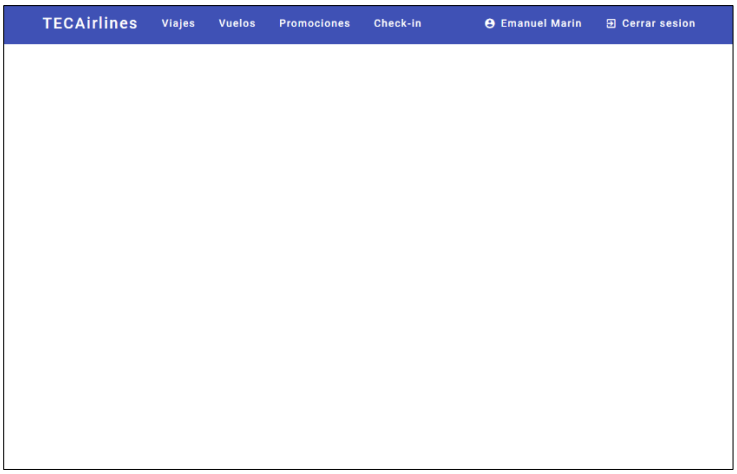
Date and time of entry: 10/1/2023 5:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- I added some components and did the Routing of the main view

Evidence of work:



Log entry #16:

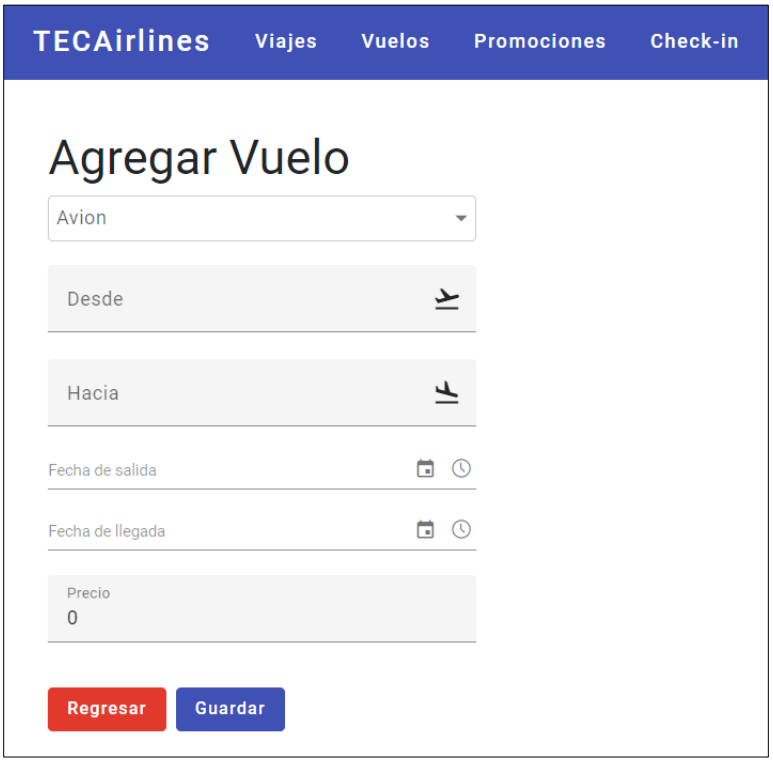
Date and time of entry: 10/2/2023 7:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- I worked on the REST Api and the Admin-View to be able to add flights

Evidence of work:



Log entry #17:

Date and time of entry: 10/3/2023 3:00 a.m.

Participating members: Emanuel Marín

Performed activities:

- Regarding the flight view, I worked on being able to list and delete them.

Evidence of work:

Log entry #18:

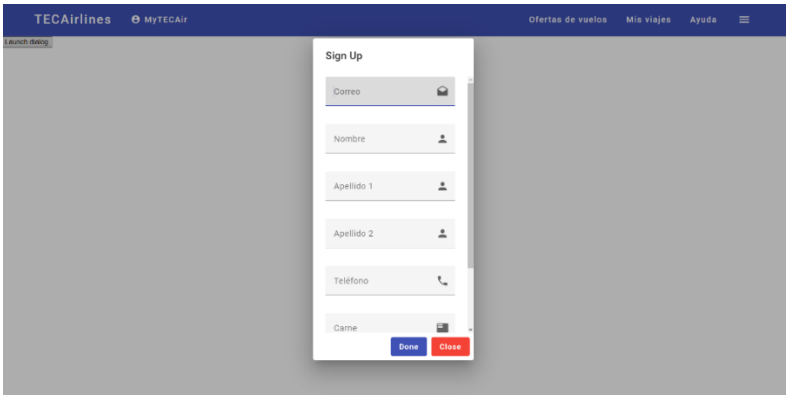
Date and time of entry: 10/2/2023 1:00 a.m.

Participating members: Óscar Soto

Performed activities:

- FrontEnd Development for User Sign Up

Evidence of work:



Log entry #19:

Date and time of entry: 10/5/2023 4:00 p.m.

Participating members: Jose Andrés Rodríguez

Performed activities:

- Designed an initial view for the baggages registration and check-in management of admin view.

Log entry #20:

Date and time of entry: 10/6/2023 4:00 p.m.

Participating members: Jose Andrés Rodríguez

Performed activities:

- Updated the book flight component

Log entry #21:

Date and time of entry: 10/12/2023 4:00 p.m.

Participating members: Jose Andrés Rodríguez

Performed activities:

- Developed a section to display flights stepovers.

Log entry #22:

Date and time of entry: 10/13/2023 4:00 p.m.

Participating members: Jose Andrés Rodríguez

Performed activities:

- Connected the trips view with the database information.

Log entry #23:

Date and time of entry: 10/14/2023 4:00 p.m.

Participating members: Jose Andrés Rodríguez

Performed activities:

- Solved bugs on flight searching
- Connected stepovers with database

Log entry #24:

Date and time of entry: 10/16/2023 12:00 a.m.

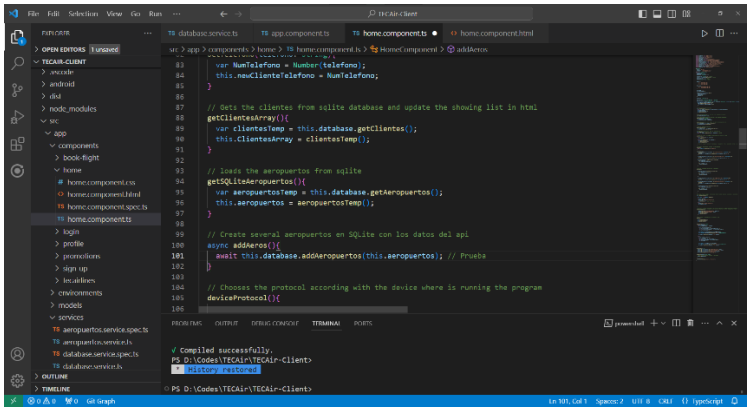
Participating members: Óscar Soto

Performed activities:

- SQLite implementation on android

- Internet connection verification
- Verification of platform on which the application is running
- Development of execution protocols according to execution platform

Evidence of work:



Log entry #25:

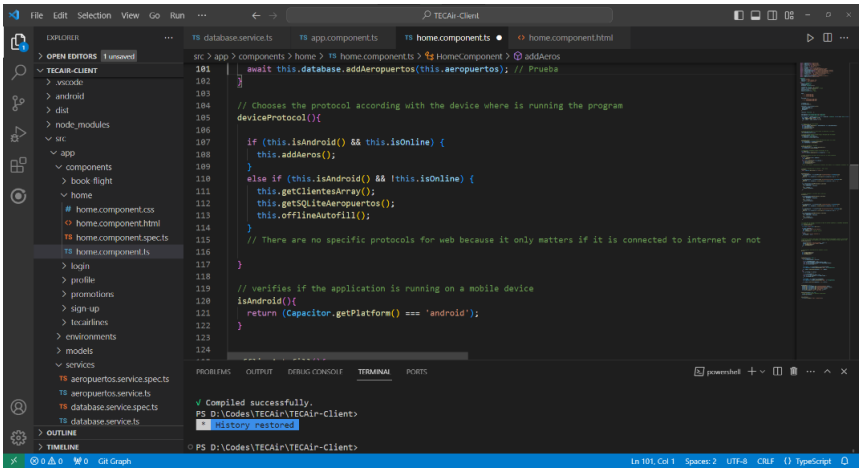
Date and time of entry: 10/17/2023 6:00 p.m.

Participating members: Óscar Soto

Performed activities:

- Postgres Airport Synchronization in SQLite

Evidence of work:



Log entry #26:

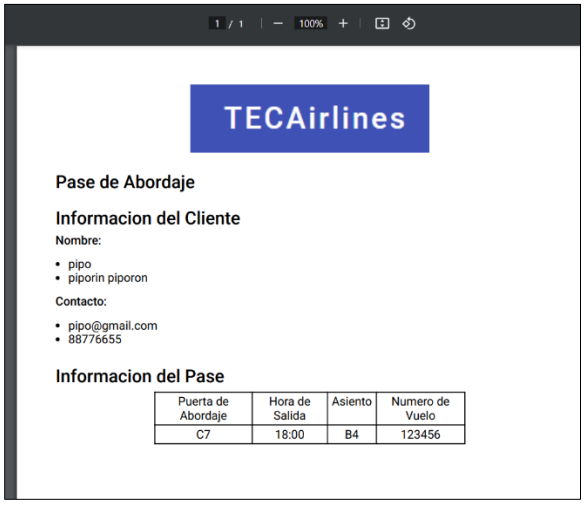
Date and time of entry: 10/18/2023 1:00 a.m.

Participating members: Sebastián Chen

Performed activities:

- Development of the PDF for the boarding pass

Evidence of work:



Log entry #27:

Date and time of entry: 10/19/2023 4:00 p.m.

Participating members: Jose Andrés Rodríguez

Performed activities:

- Fully integrated stepovers view with database

Log entry #28:

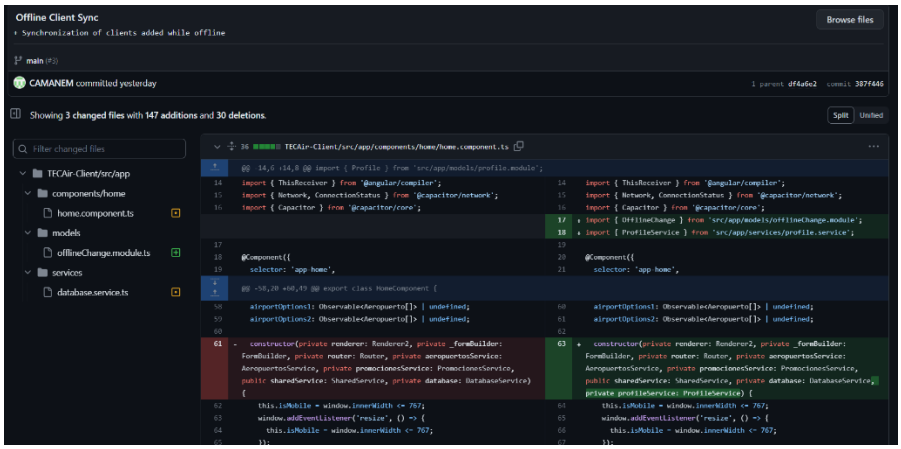
Date and time of entry: 10/20/2023 8:00 p.m.

Participating members: Óscar Soto

Performed activities:

- Offline-online synchronization of clients

Evidence of work:



Log entry #29:

Date and time of entry: 10/20/2023 4:00 p.m.

Participating members: Jose Andrés Rodríguez

Performed activities:

- Daveloped a logic for seats management
- Integrated the flight reservation with database (post)

Log entry #30:

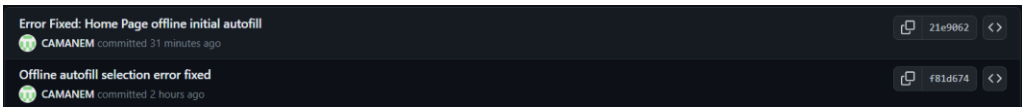
Date and time of entry: 10/21/2023 3:00 p.m.

Participating members: Óscar Soto

Performed activities:

- Offline autocomplete showed airports but did not allow them to be selected
- Offline autocomplete only worked after changing pages and returning to home

Evidence of work:



Log entry #31:

Date and time of entry: 10/21/2023 4:00 p.m.

Participating members: Jose Andrés Rodríguez

Performed activities:

- Solved bugs on flights booking

Log entry #32:

Date and time of entry: 9/27/2023 9:00 p.m.

Participating members: Sebastián Chen

Performed activities:

- First tests of SQLite for the development of a database on Android

Evidence of work:

Log entry #33:

Date and time of entry: 10/2/2023 11:00 p.m.

Participating members: Sebastián Chen

Performed activities:

- Developing profile view on client to display data from database

Evidence of work:

Log entry #34:

Date and time of entry: 9/30/2023 5:00 p.m.

Participating members: Sebastián Chen

Performed activities:

- Creating the database population script

Evidence of work:

Log entry #35:

Date and time of entry: 10/15/2023 6:00 p.m.

Participating members: Sebastián Chen

Performed activities:

- Development of a view to create promotions from the administrator

Evidence of work:

Log entry #36:

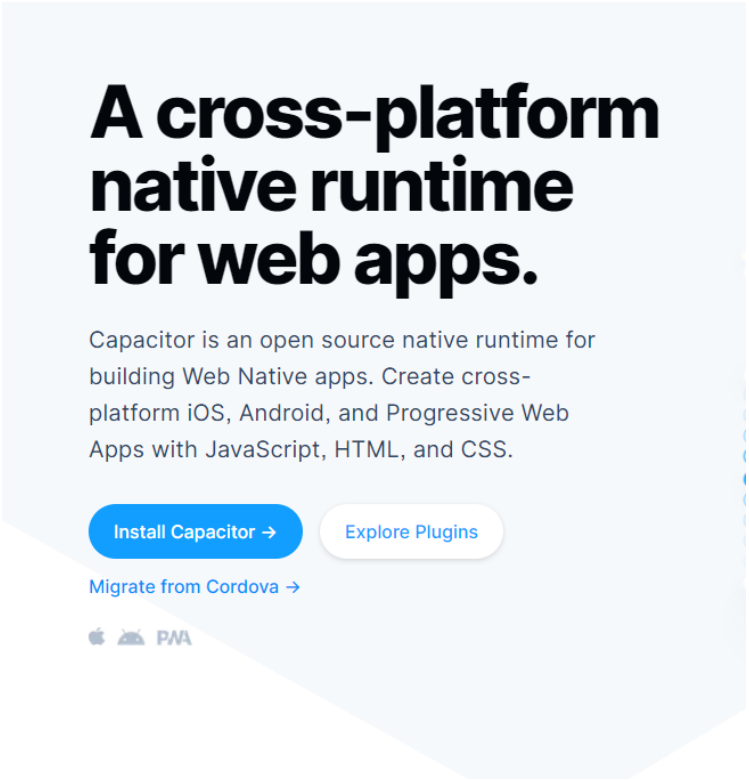
Date and time of entry: 10/16/2023 6:00 p.m.

Participating members: Sebastián Chen

Performed activities:

- Integration of client view into mobile app via capacitor/Ionic

Evidence of work:



Log entry #37:

Date and time of entry: 10/20/2023 11:00 p.m.

Participating members: Sebastián Chen

Performed activities:

- Storing and retrieving data from the SQLite database

Evidence of work:

Log entry #38:

Date and time of entry: 10/21/2023 9:00 a.m.

Participating members: Sebastián Chen

Performed activities:

- Debug errors when calling information from SQLite to show offline

Evidence of work:

Log entry #39:

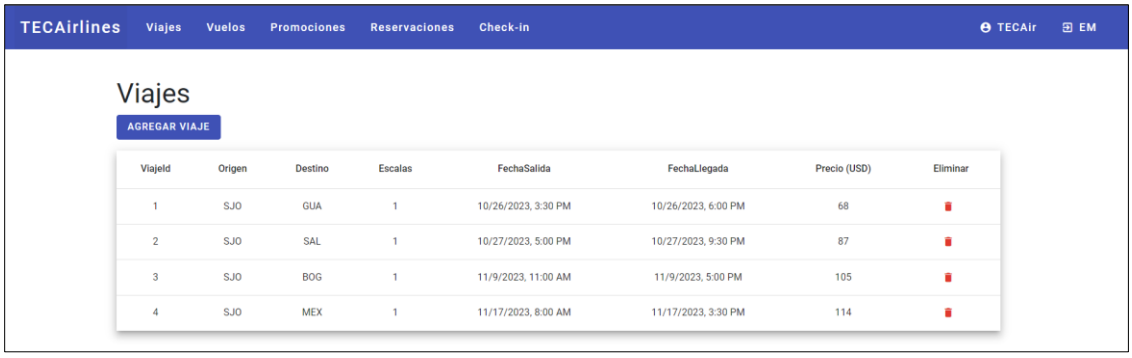
Date and time of entry: 10/6/2023 11:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- I worked on trip view

Evidence of work:



Log entry #40:

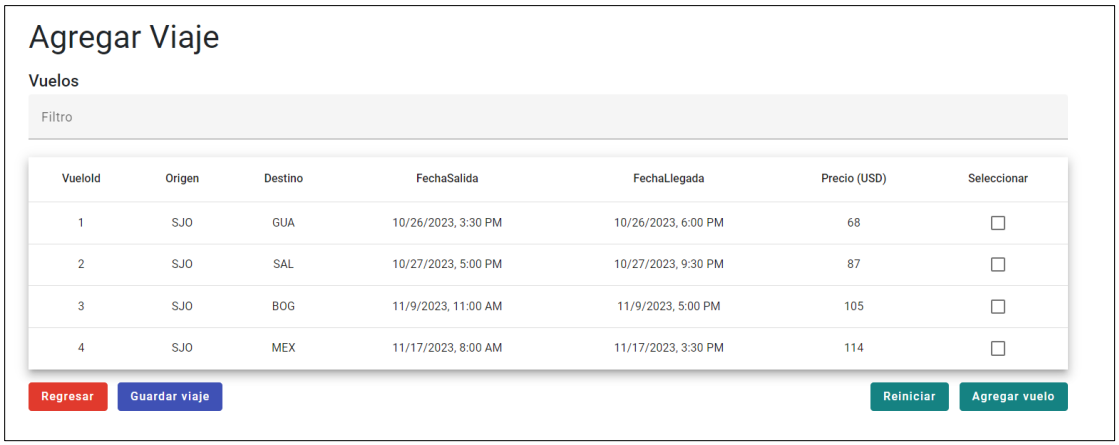
Date and time of entry: 10/27/2023 3:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- Finish the view and logic to be able to add trips with n stops

Evidence of work:



Log entry #41:

Date and time of entry: 10/11/2023 7:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- I finished the view to be able to add promotions

Evidence of work:

Log entry #42:

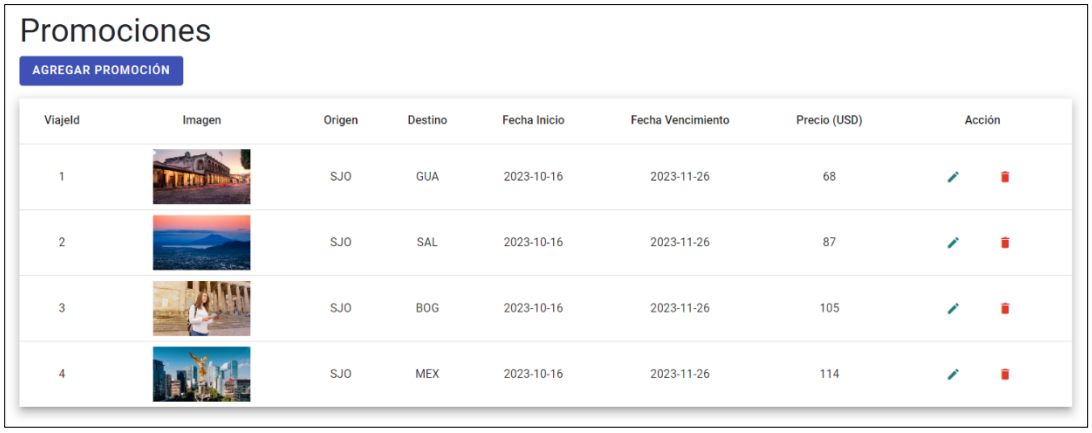
Date and time of entry: 10/12/2023 11:30 p.m.

Participating members: Emanuel Marín

Performed activities:

- I finished the promotions view. That is, they can be added, edited and deleted

Evidence of work:



Log entry #43:

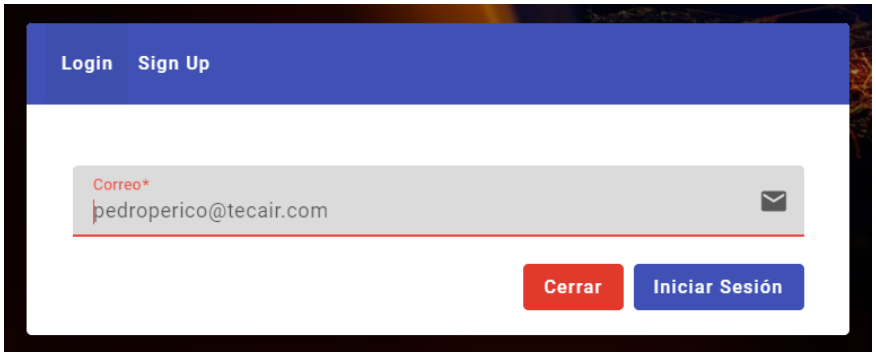
Date and time of entry: 10/13/2023 8:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- Work on the login dialog in the client view

Evidence of work:



Log entry #44:

Date and time of entry: 10/14/2023 5:30 p.m.

Participating members: Emanuel Marín

Performed activities:

- I finished the dialog window for customers to register

Log entry #45:

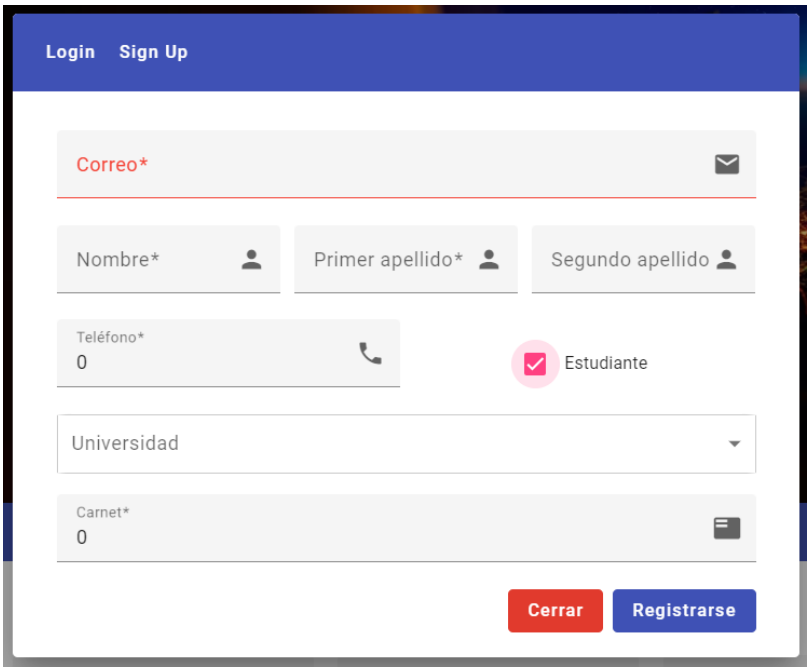
Date and time of entry: 10/22/2023 4:00 p.m.

Participating members: Jose Andrés Rodríguez

Performed activities:

- Solved some bugs and validations on baggages registration and check in view
- Flight booking integration with admin system.

Log entry #46:



Log entry #47:

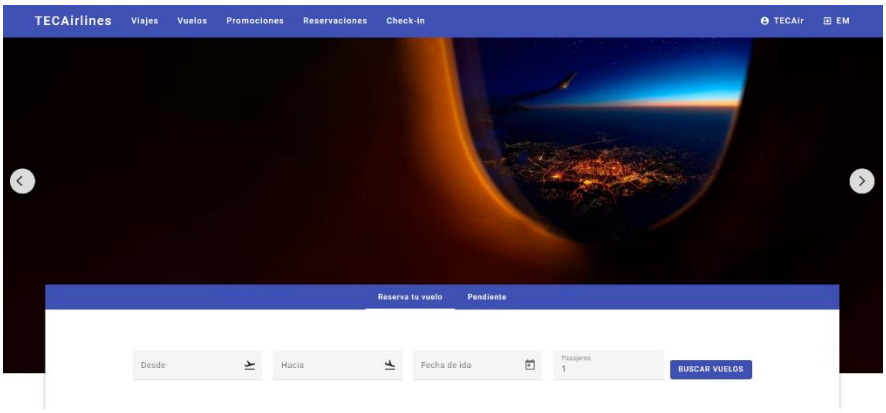
Date and time of entry: 10/17/2023 6:30 p.m.

Participating members: Emanuel Marín

Performed activities:

- I added the reservations view in the admin that is the same as the main client view

Evidence of work:



Log entry #48:

Date and time of entry: 10/19/2023 7:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- Work on the view to see the customer profile from the admin

Evidence of work:

Log entry #49:

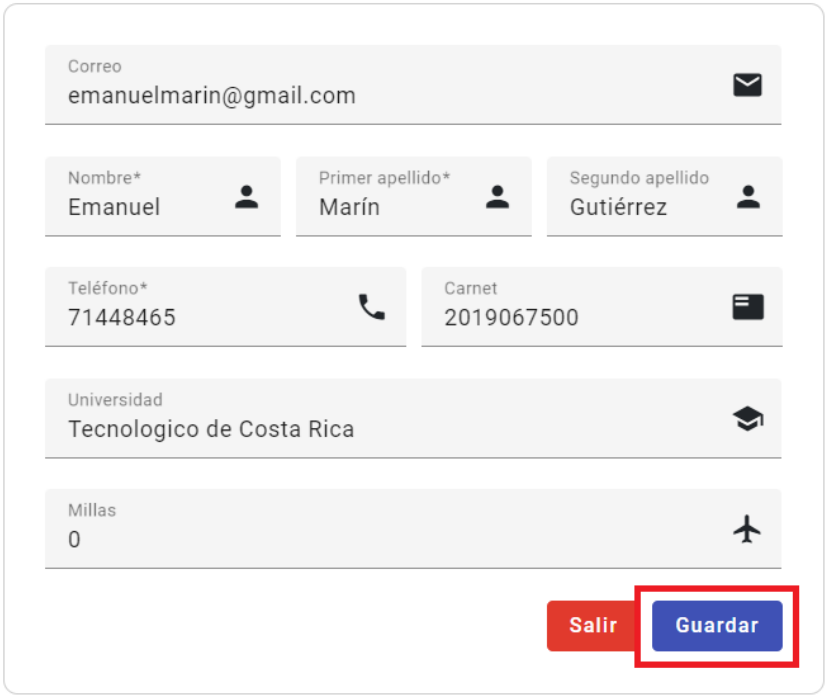
Date and time of entry: 10/22/2023 7:00 p.m.

Participating members: Emanuel Marín

Performed activities:

- I worked to be able to edit and save a user's information

Evidence of work:



Conclusiones

In the development of this project there where some interesting conclusions, the most crucial was the use of Ionic for the development of the mobile application as a code accelerator, it takes an angular or react native program and turns it into a mobile application in a couple of minutes, it makes using extensions like SQLite a little bit more confusing but in the end it works like it was intended.

Reccomendations

When working a web project with Angular, consider working with components developed for specific reasons, instead of developing components in order to reuse them in other webpage sections, this is that way because, angular is a framework developed to work better with this component distribution, besides, this components management will make easier the app routing and components communication on run time.

If your project considers both, a webpage and a mobile application, consider using ionic and capacitor to export your project once its is fully or almost fully developed on angular or react, this will soft the workflow of developing an app for mobile devices, capacitor and ionic reuses the angular code to develop android and iOS app, easier than developing from zero.

Bibliografía consultada en todo el proyecto.

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