SpaceApp

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A Project work in iOS Development

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Contents

1. Introduction:

We live here on earth, and we know a few things of our world, but what about space? SpaceApp allows users to learn a few things about space, and what is happening there at this moment:

1- SpaceApp allows users to see a daily pictures about astronomy from NASA and facts about every picture (APOD), so the users can have a new picture and new information about space every day.
2- There are 8 billion people on earth, but do you know how many people are in space right now? SpaceApp allows users to know how many people in space and their names.
3- It is possible to see the international space station (ISS) from the earth (it looks like a big white dot that moves across the sky) SpaceApp allows users to know where the international space station (ISS) is located right know.
4- Users can read news about space and astronomy, and every day those news update to a new news.
All of that and more is visualized in figure 1 below:

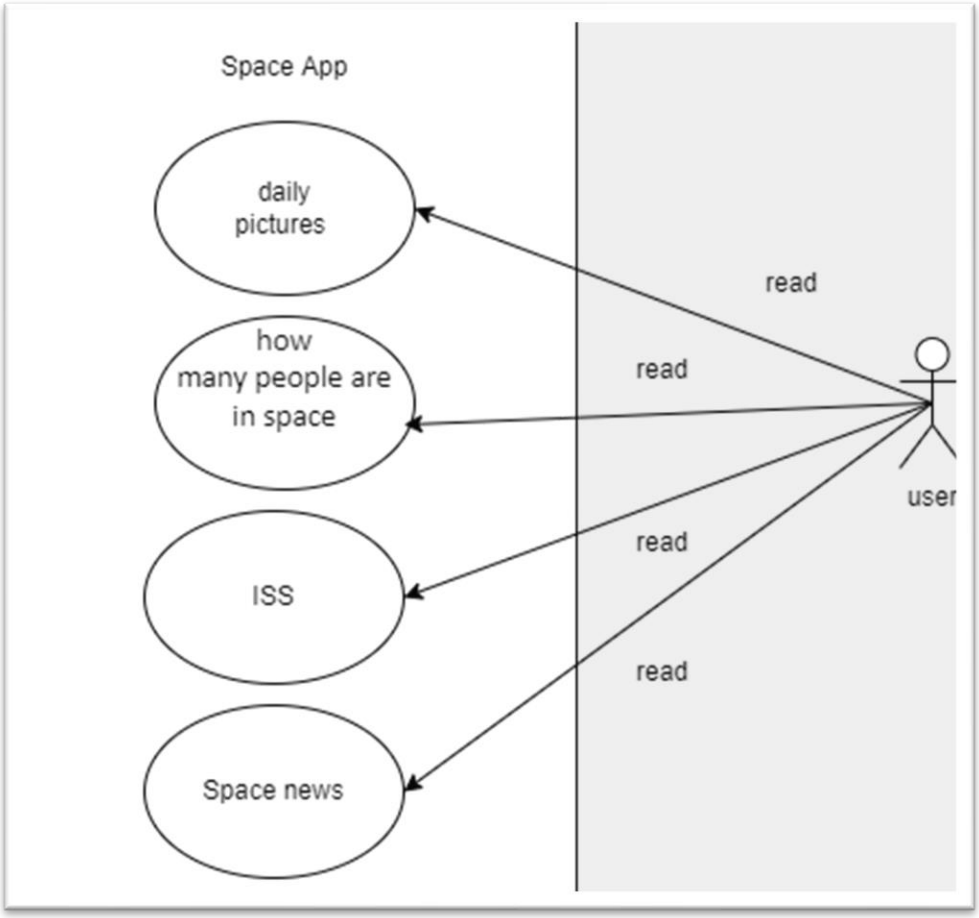

Figure 1 shows a use case diagram for SpaceApp

2. Graphical user interface:

The Graphical User Interface (GUI) in SpaceApp is designed to be user friendly and effortless to maintain, as shown in figure 2 below:

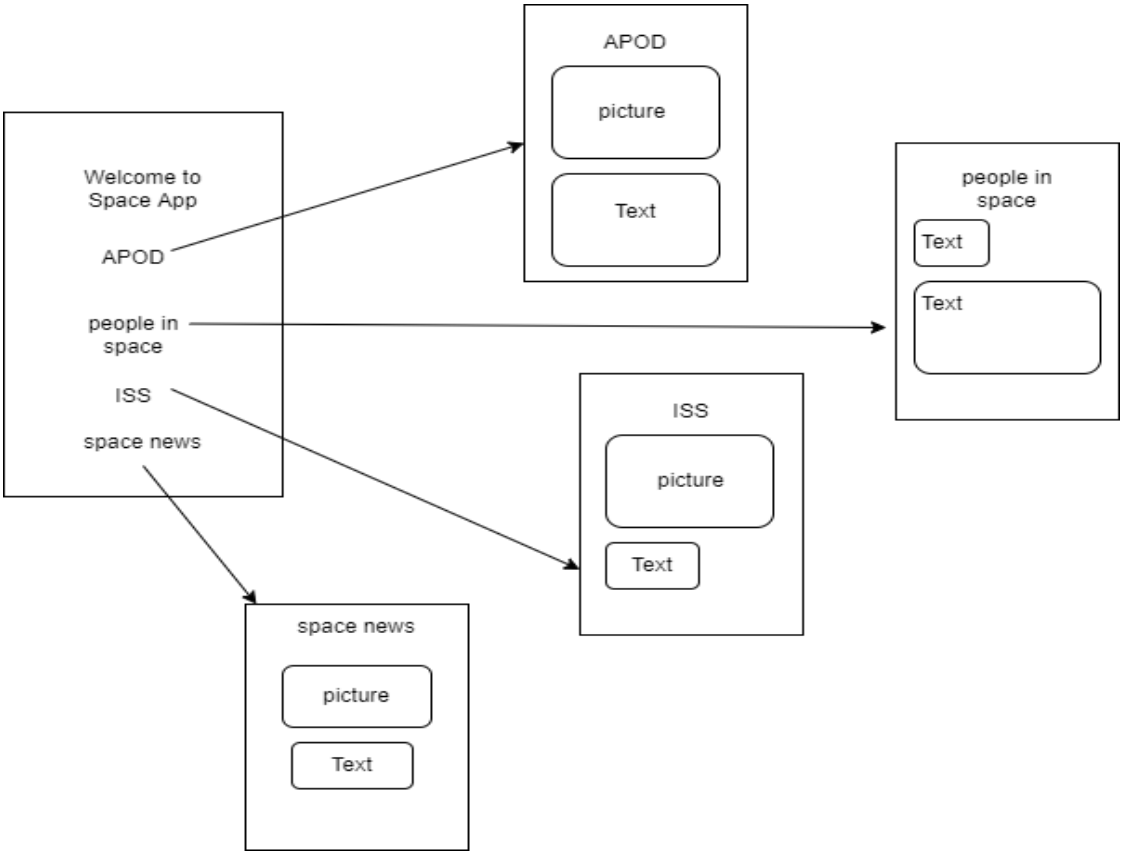

Figure 2 shows a sketch for SpaceApp Graphical User Interface

- Figure 3 below shows some screenshots of the GUI rendered for the user on an iPhone 14 pro:

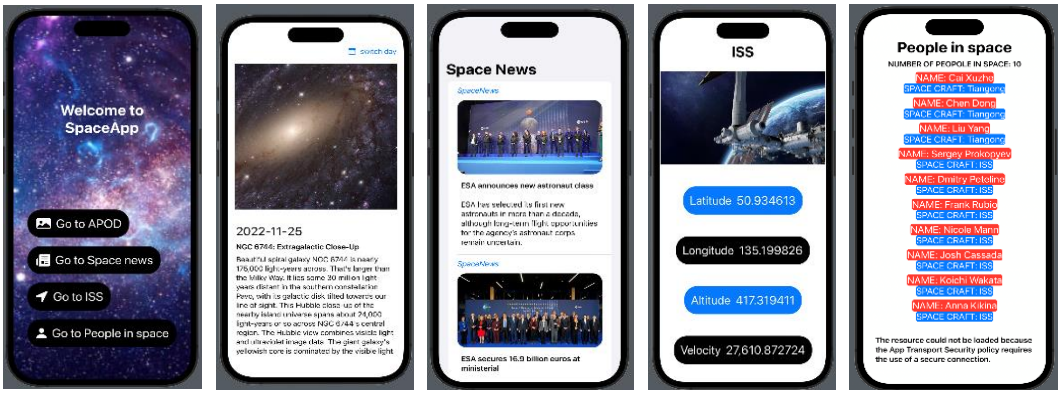

Figure 3 illustrates some of the GUI rendered on an iPhone 14 pro

3. Architecture:

Figure 4 below shows the high-level architecture of SpaceApp:

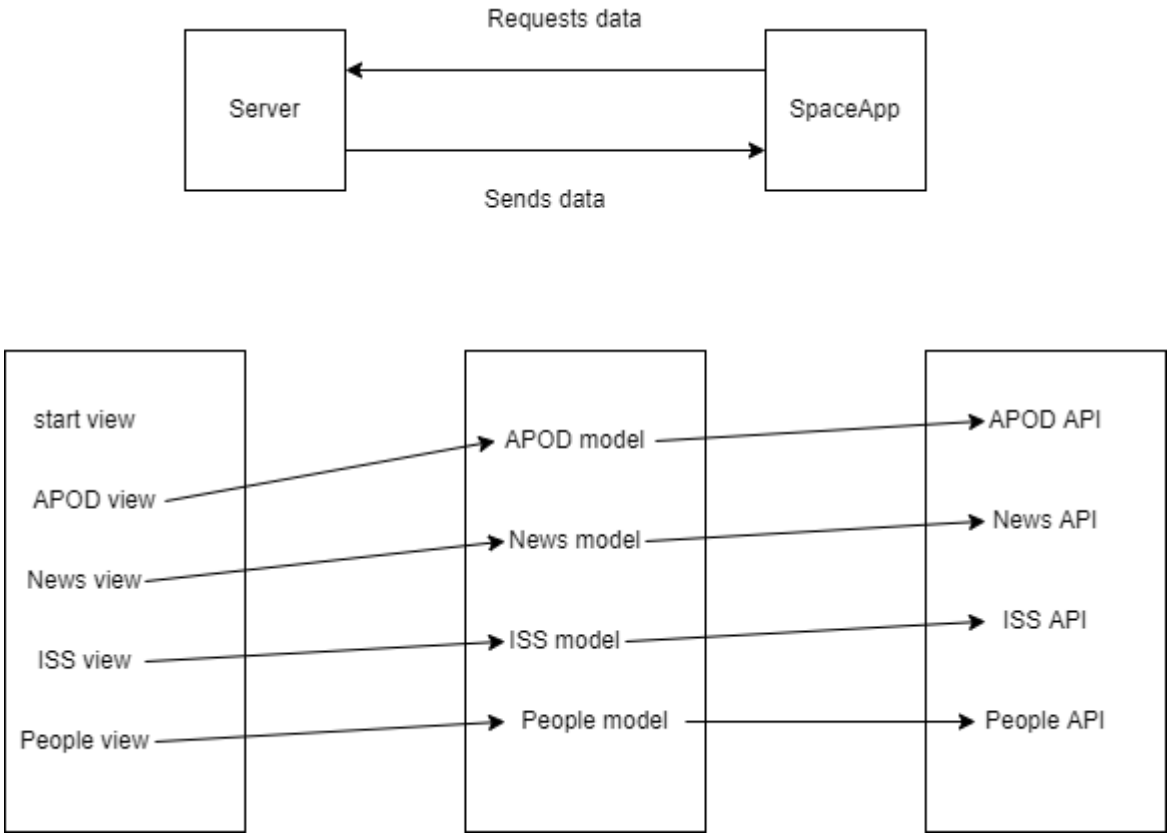

Figure 4 explains MVVM of SpaceApp

- Model-View-ViewModel:
  - Model: Access to the data layer, core functionality to manipulate data
  - View: The user interface, forwards user input
  - ViewModel: Abstraction of the view, providing binding for communication

4. Implementation:

SpaceApp fetch JSON from external API and parse it so that it can access JSON object values, for example:

- Pulling data from an Open-source ISS API (api.wheretheiss.at)

1. Connect to an API. At first, we need to connect to an API and make a secure connection.
2. Get the data from API.
3. Parse the data into JSON format.
4. Extract the data and print it.

SpaceApp is implemented by using MVVM pattern. Figure 5 below shows how the SpaceApp files is distributed in three different folders, and the included package (swiftui-cached-async-image) which keep the same API as Async-Image and behaves the same, but it is faster to load image. I have also added a new feature (SpaceNews).

Figure 5 shows the structure of SpaceApp' files and folders

~Note: URL that is Just HTTP, is not secure so we should use HTTPS instead, figure 6 below explain who I get problem with it and how I solve it.

Figure 6 shows the challenge and how it solved

5. Learnings:

This project is a very cool and interesting, and I learned a lot of good and new things, for example:

1. I have learned how I can handle API, JSON and API key.
2. I have learned how I can handle swiftui and how I can work with design.
3. I have learned how I can handle swift, how it is works and how structure my project.
4. I have learned MVVM pattern, which help me to organise my project and make it more readable and easier to understand.
5. I have learned what is the difference between HTTP and HTTPS.
6. I have learned how I can handle XCode and how I can get packages.
7. I have learned how I can work with GitHub.
8. I have learned how I can create Unit-Tests and how it works.
9. I have learned how I can save user settings using UserDefaults

6. Outlook:

1. Improve the design by changing the background picture on the start page to a gif.
2. Show the location of the ISS on a map.
3. Add new features to make the App more useful.
4. Hopefully in the future there will be a safe API for People in space that I can use.