Library Book Loan System

Architecture Notebook

Purpose

The main purpose of this system is to provide book exchange to the user in an easy way. Also philosophically, this project aims to increase the book reading rate of users. With this thought, people living in today's world can add something to them in terms of culture without much effort. Economically, the system works in the form of borrowing-borrowing free of charge.

Architectural goals and philosophy

At first we thought that it was easy and simple to use when designing this system. Users who use other and older systems on this site can also use the system easily. From a performance standpoint, we now think that we will not have a problem because we have developed a system that is compatible with the Android operating system that most people have. Another reason for this is that it is a system that even the lowest level android (4.0) version can run.

It will be an easy-to-maintain project because the system requirements are not too high, even though we will consider it in the long run. The system is designed not only for users but also for system administrators. In this way, the maintenance of the system can be easily performed by the managers without the need of other persons.

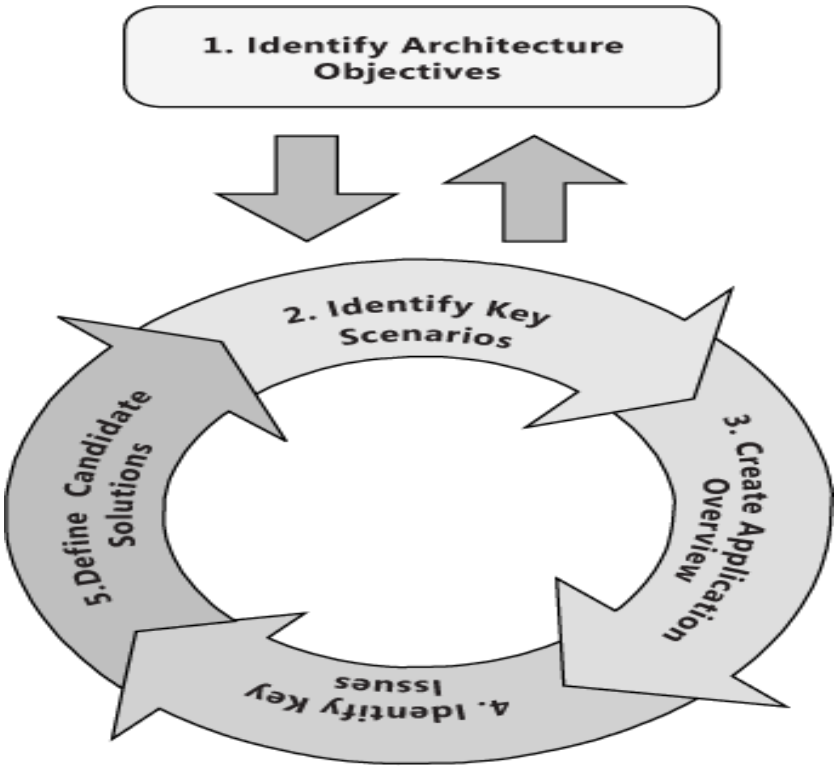
Assumptions and dependencies

If we look at system dependencies, we have a mobile device with an android operating system that we expect users to have first. However, it can’t be said that this is a very important addiction in today's conditions. It can also be seen as a convenience of preference rather than a computer rather than a dependency. Whether it is easy to use the system or a little from the user, we are looking forward to using the phone. And finally, an active internet connection is required throughout the process. When these conditions are met, the system can work smoothly. We think that as a team, we are experienced enough to be able to overcome this project. This makes us very comfortable in the project process.

Architecturally significant requirements

We have benefited from the following link when designing the architecture of our system. We decided that what we did was progressing because this link was provided by Microsoft.

https://msdn.microsoft.com/en-us/library/ee658084.aspx



According to this link, we followed the steps below while creating our architecture.

1. **Identify Architecture Objectives**

Moving ahead by focusing on our architecture and putting clear goals ahead of us in the project makes it easier for us to solve.

2. **Key Scenarios**.

We need to use the main scenarios for the important issues as the project progresses in the design phase. When the candidate scenarios are ready, we should include them in the project.

3. Application Overview

In this step, we must link our design to the real world in which the application will work. That is why we have to define the application type and technology.

4. Key Issues

In the project process, we must determine the main issues based on the attributes. These are areas where errors are frequently made when designing an application.

Decisions, constraints, and justifications

When designing our system architecture, we paid attention to the following constraints. Because these constraints will be constantly contested during the project process. And we will put the system on these constraints.

- In order to ensure the sustainability of the system, we put a limit of max 5 minutes after a user logs into the system. On this page, we are giving opportunity to other users who want to benefit from the system. And at the same time, we have prevented the system from slowing down.

- We restricted all users to having 10 users at the same time in order to ensure that they have what they want when they want it. If the user wishes to take the 11th book, this is prevented by the restriction.

- After user got the user book, we set a max time limit for this book. In this way the user is encouraged to read the book. And in a short time it is possible to get this book in other users by providing the completion.

Architectural Mechanisms

Architectural Mechanism 1

When the book is taken as a user, the book is checked to see who it is.

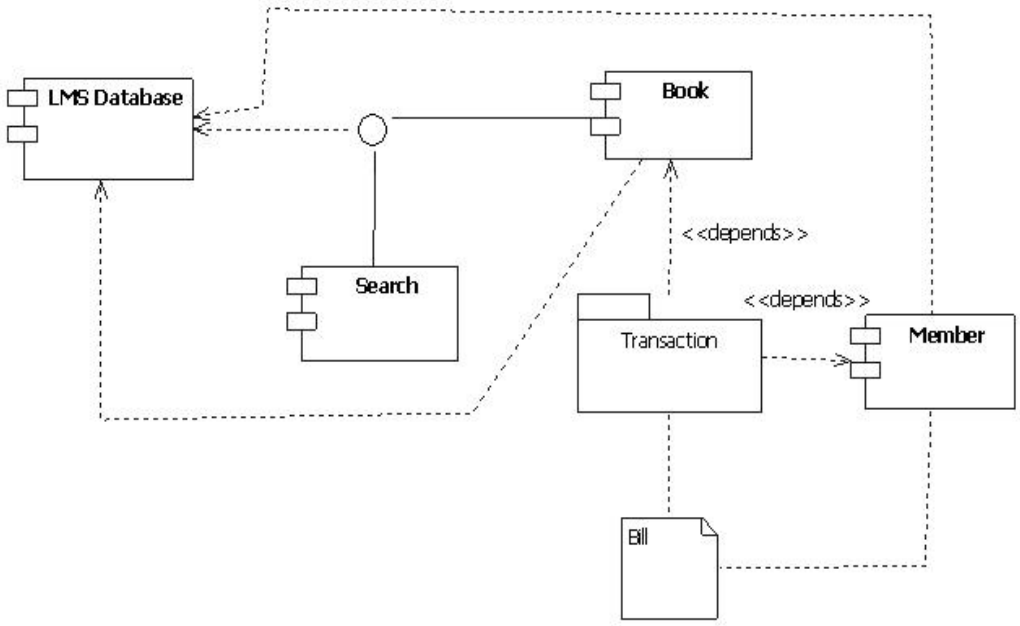
Architectural Mechanism 2

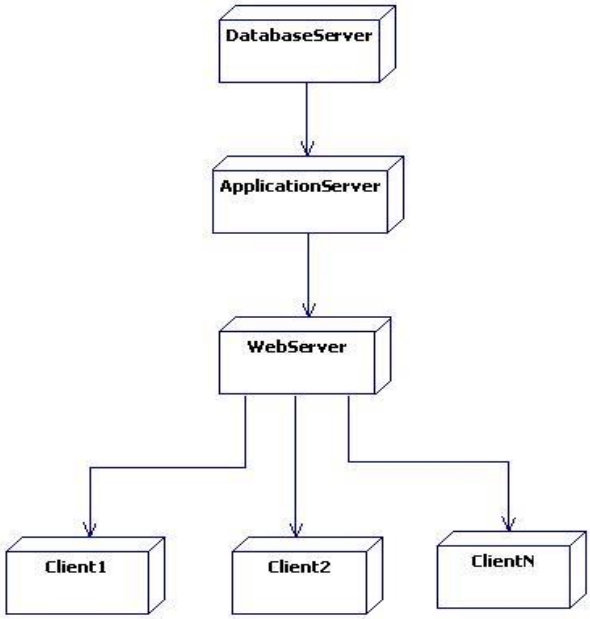
In the library, the answer to the book is exist? So if we know about this the user can buy the book.

Layers or architectural framework

We provided a number of ways to make the architecture we use in our system consistent. We provided the database and the necessary controls on the android side. While we were giving the book, we tried to pull out the most logical results from the database, depending on the searcher's search term. We have checked that this software is accurate and stable for all users.

Architectural views





- **Logical**: Describes the structure and behavior of architecturally significant portions of the system. This might include the package structure, critical interfaces, important classes and subsystems, and the relationships between these elements. It also includes physical and logical views of persistent data, if persistence will be built into the system. This is a documented subset of the design.
- **Operational**: Describes the physical nodes of the system and the processes, threads, and components that run on those physical nodes. This view isn't necessary if the system runs in a single process and thread.
- **Use case**: A list or diagram of the use cases that contain architecturally significant requirements.