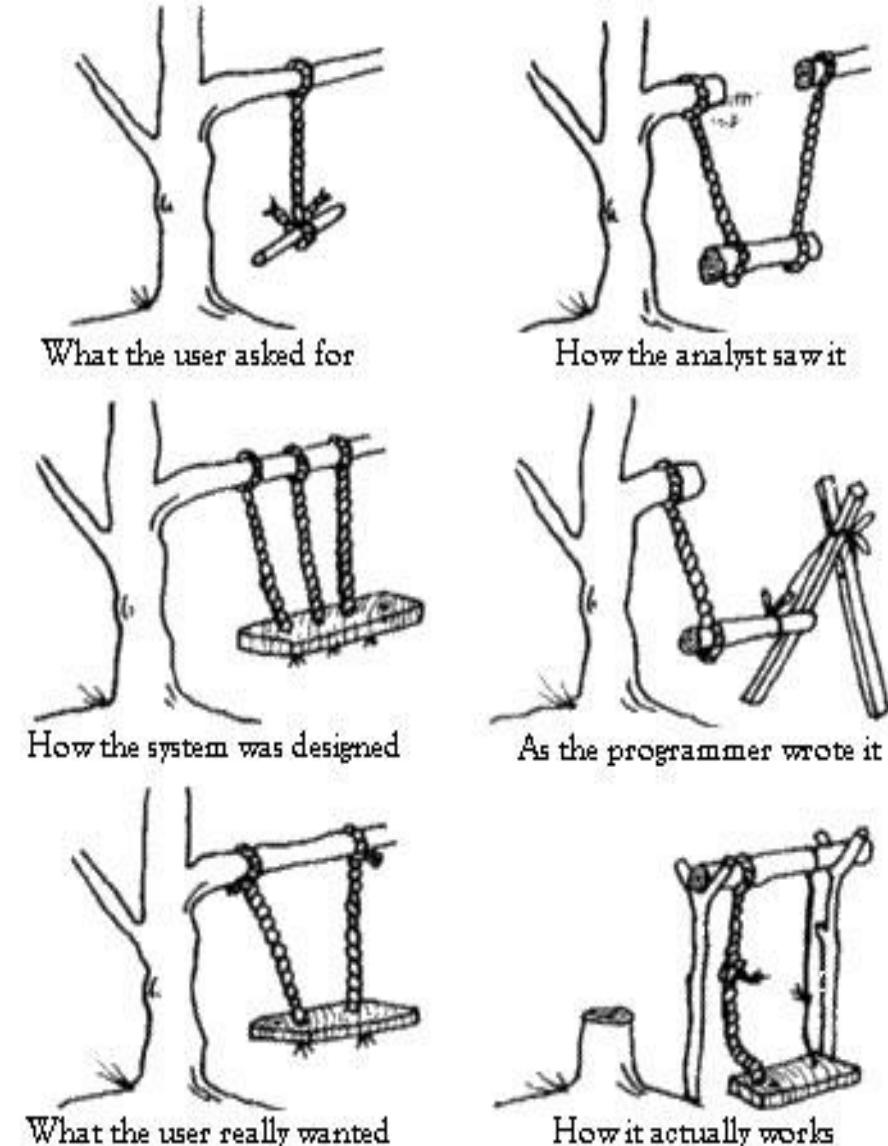


CAMPUS NAV





CS 360 – Software Engineering

Course Instructor: Dr. Hamid Abdul Basit

Teaching Assistant – Shamsa Abid

Course Project – Campus Nav

Group 3



Team Intro

- ✓ Aroosha Ahmad
- ✓ Hafiz Salman Asif
- ✓ Muhammad Junaid Khalid
- ✓ Muhammad Nauman Minhas





Salman Asif

- ✓ Team Lead
- ✓ Product Design
- ✓ Development of Indoor Positioning system
- ✓ Customizing Data Structures specific to the application





Aroosha Ahmad

- ✓ Project Manager
- ✓ Documentation
- ✓ Collection and Modification of Data and Maps
- ✓ Creation of Map Graphs





Junaid Khalid

- ✓ Core Developer
- ✓ App and Server communication
- ✓ Google Map API
- ✓ Google Location API
- ✓ Android API





M. Nauman

- ✓ **UI Designer & Developer**
- ✓ Implementation of GUI
- ✓ Interaction with GPS and Wi-Fi Sensors
- ✓ Accessing and manipulating the data of Wi-Fi routers



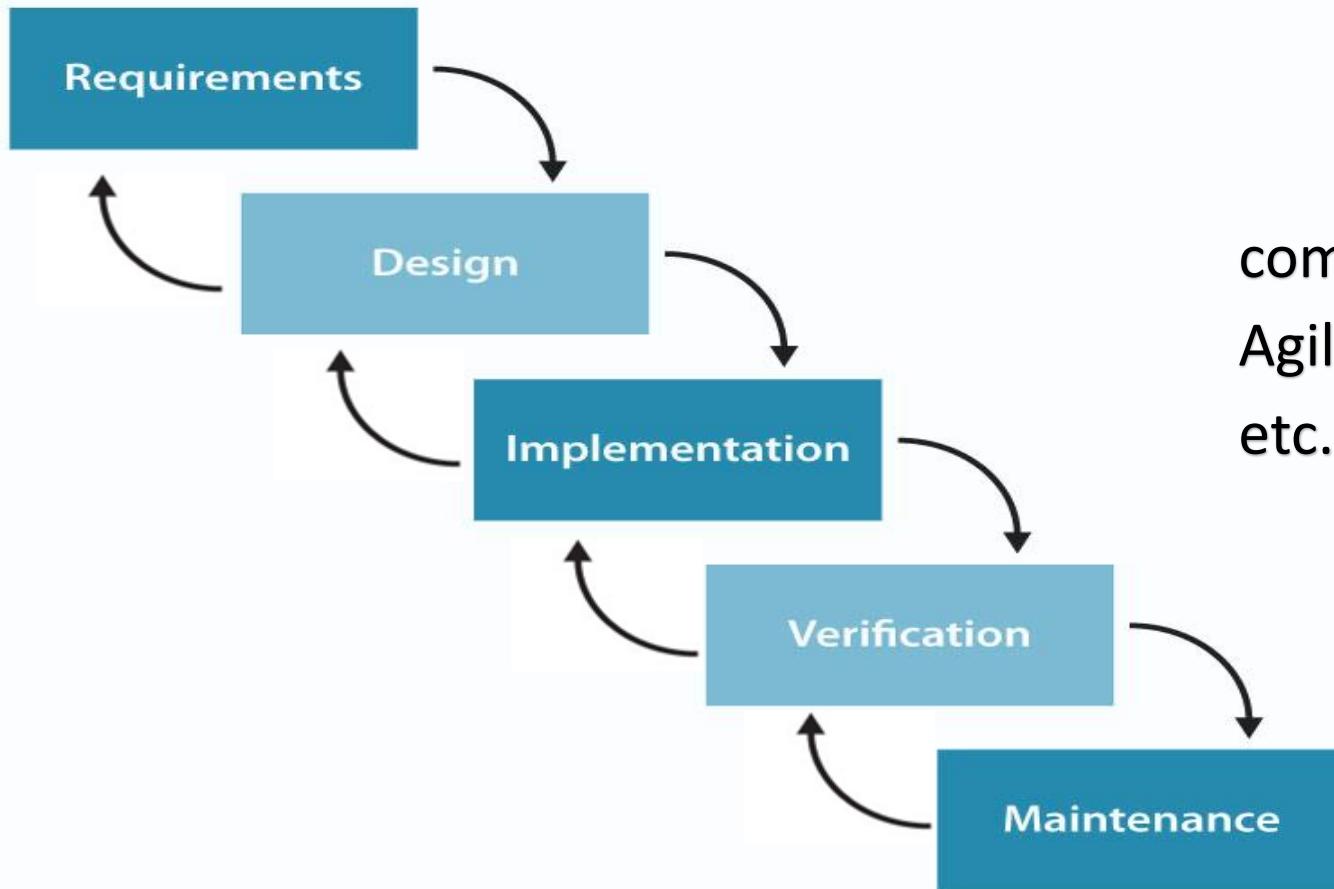
Problem Domain



- ✓ LUMS hosts more than 6000 visitors every year for various events and conferences.
- ✓ A batch more than 1000 is inducted into the LUMS community every year.
- ✓ All these people are alien to the campus and locations in LUMS and have to make a couple of extra rounds before reaching the desired location especially if the location happens to be in academic block.
- ✓ Academic Block, the famous puzzle.



Process Model



Waterfall model

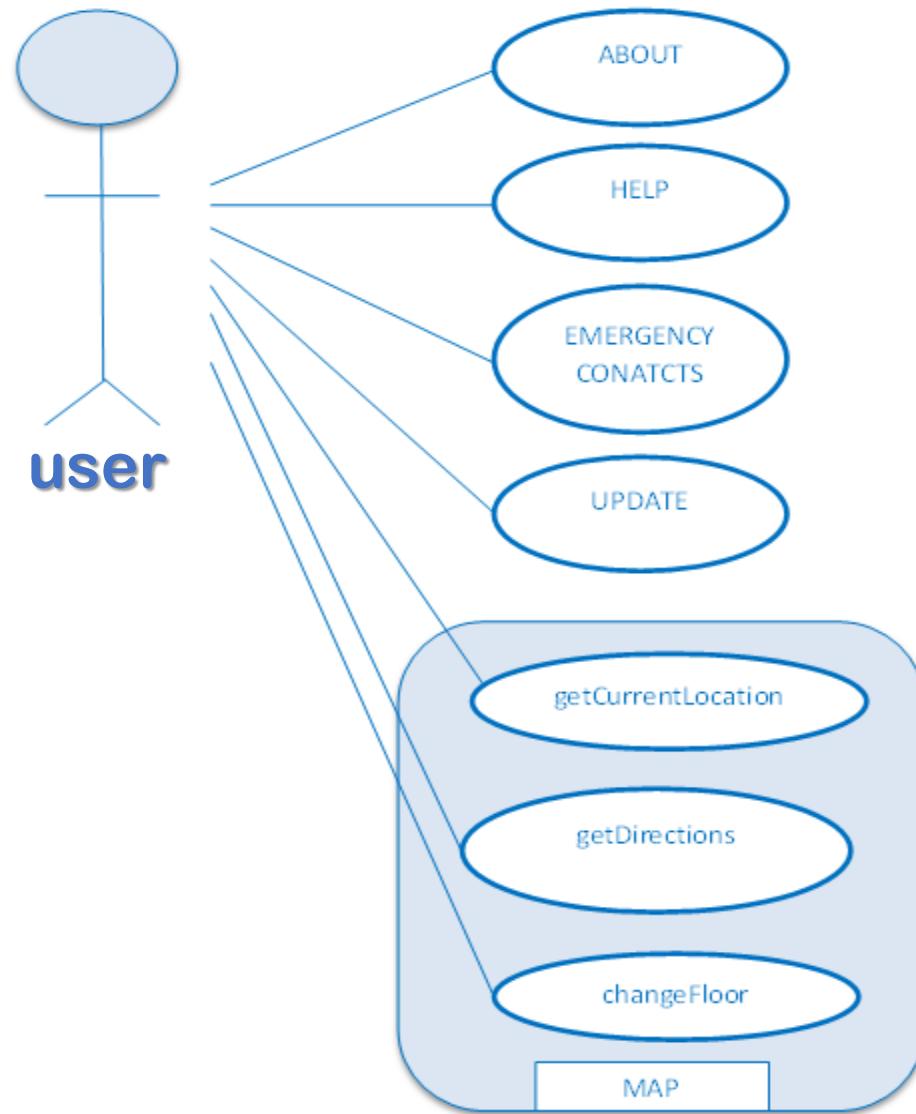
combined with some of the practices of Agile methodology like pair programming etc.



Time Line Chart

Planned Starting Date for a task	25-Mar	28-Mar	1-Apr	4-Apr	8-Apr	13-Apr	15-Apr	17-Apr	21-Apr	25-Apr	30-Apr
Planned Duration for a task (Days)	3	3	3	4	5	2	2	4	4	5	2
Tasks											
Developing algorithm for indoor position detection (Salman)											
Developing algorithms for finding the location for the given GPs coordinates.(Salman)											
Developing Algorithms for traversing and finding indoor destination and creating a guiding map for it.(Salman)											
Mobile phone application development that will consist of creating all the GUI.(Nauman)											
Writing Programs to get GPS coordinates of a location.(Nauman)											
Writing Programs to get MAC addresses and signal strength of the available Wi-Fi routers.(Nauman)											
LUMS indoor map generation that will include creation of a comprehensive graph and associating it with the indoor detailed image and synchronizing it with the GPS coordinates.(Aroosha)											
Server Side Development.(Junaid)											

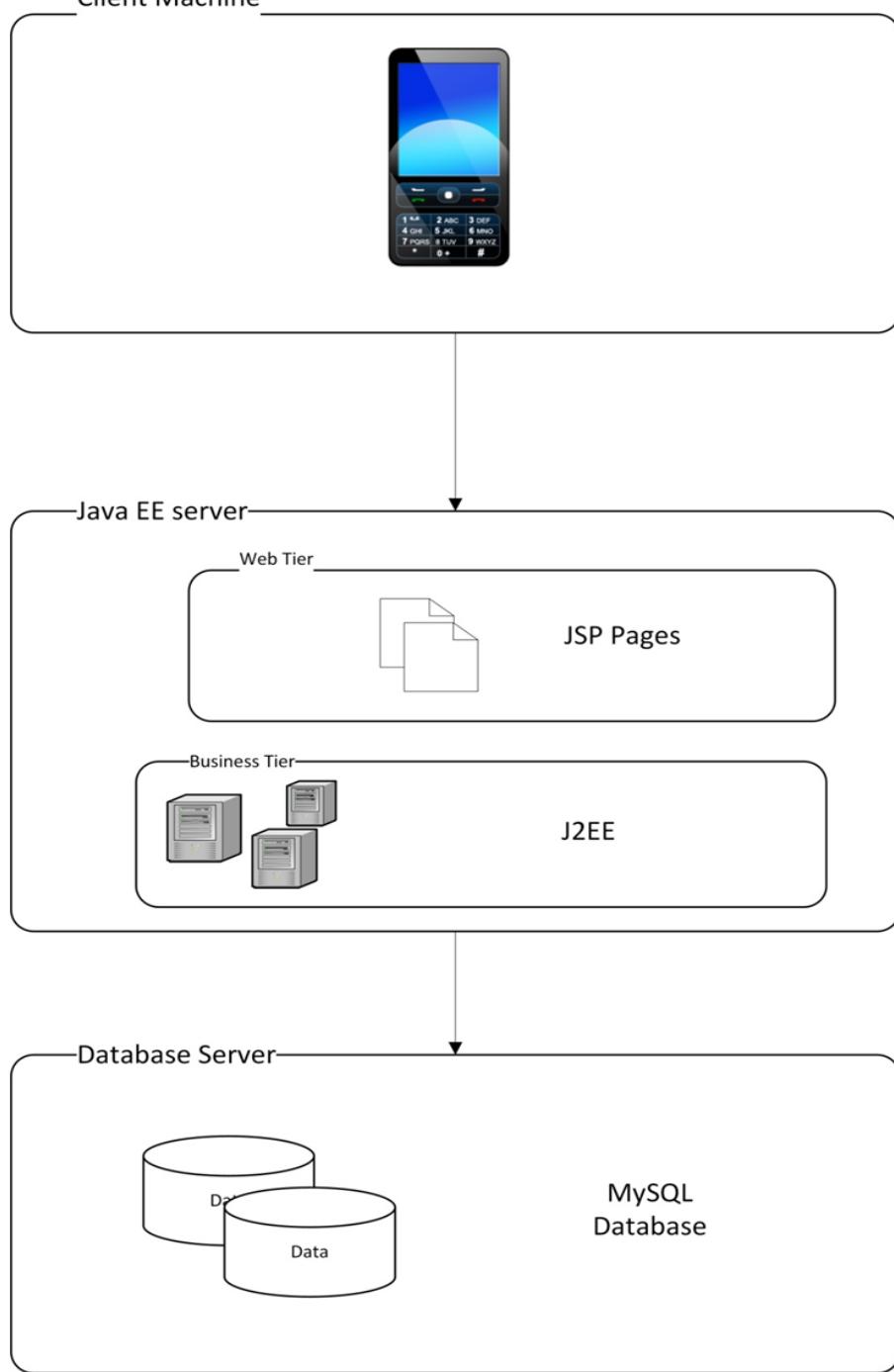
Use Case Diagram



Tools & Technology

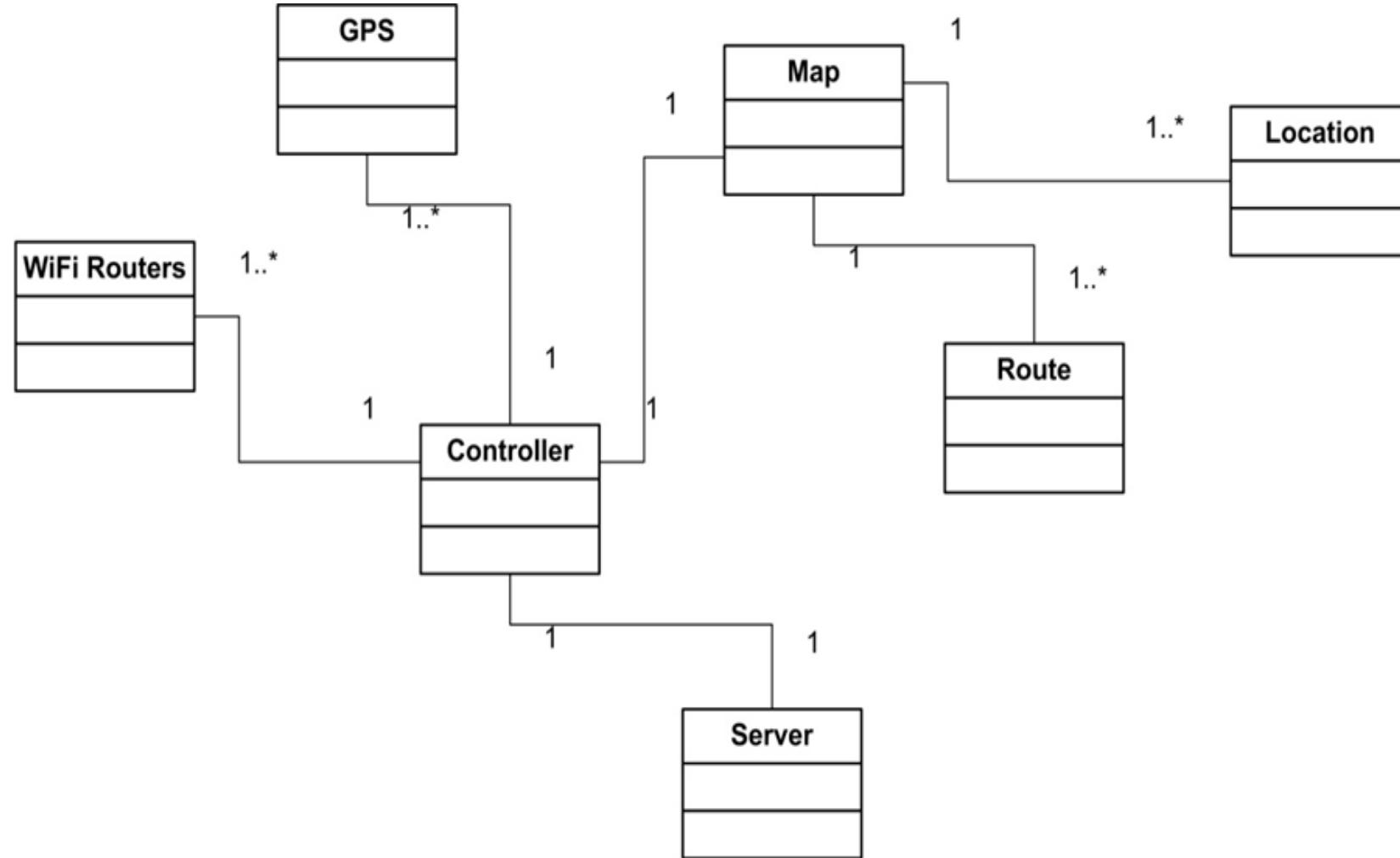
- Google Map API
- Android API
- Global Positioning System GPS
- Wi-Fi Routers working on 802.1x
- MySQL database
- Tomcat Server
- AppFog's PaaS
- Microsoft Visio
- Microsoft Word
- Microsoft PowerPoint
- GitHub
- Eclipse & Netbeans



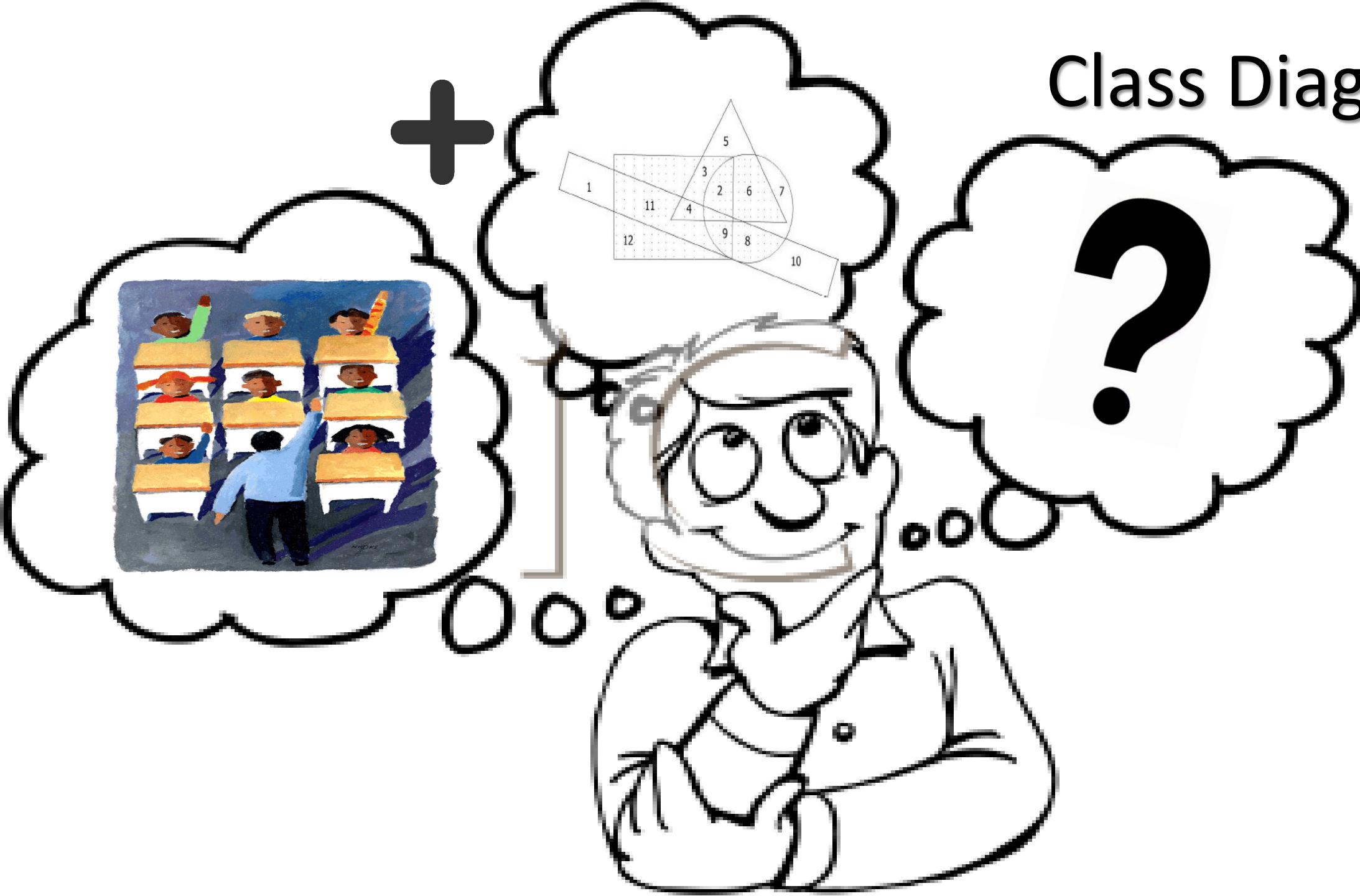


System Architecture

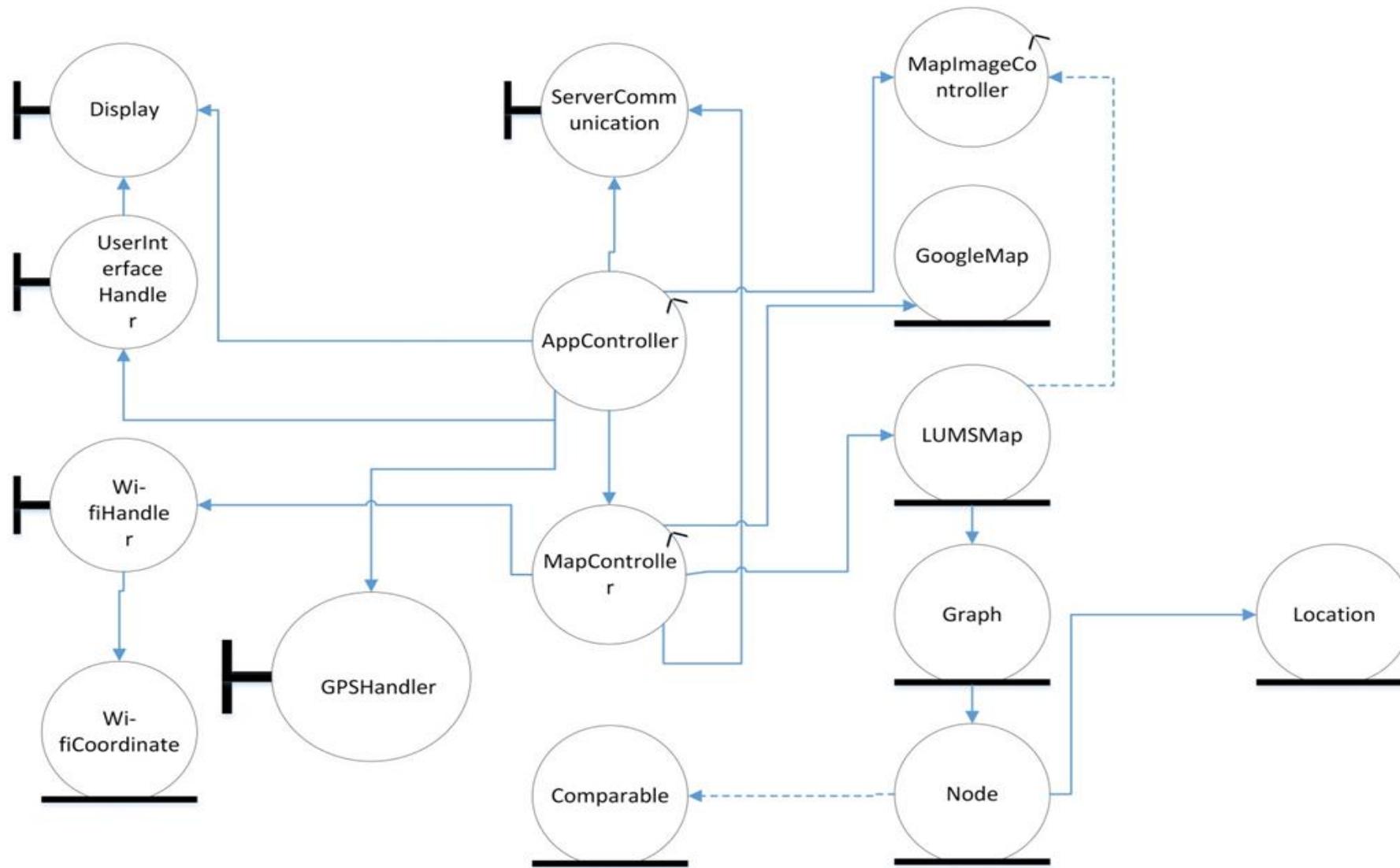
Domain Model

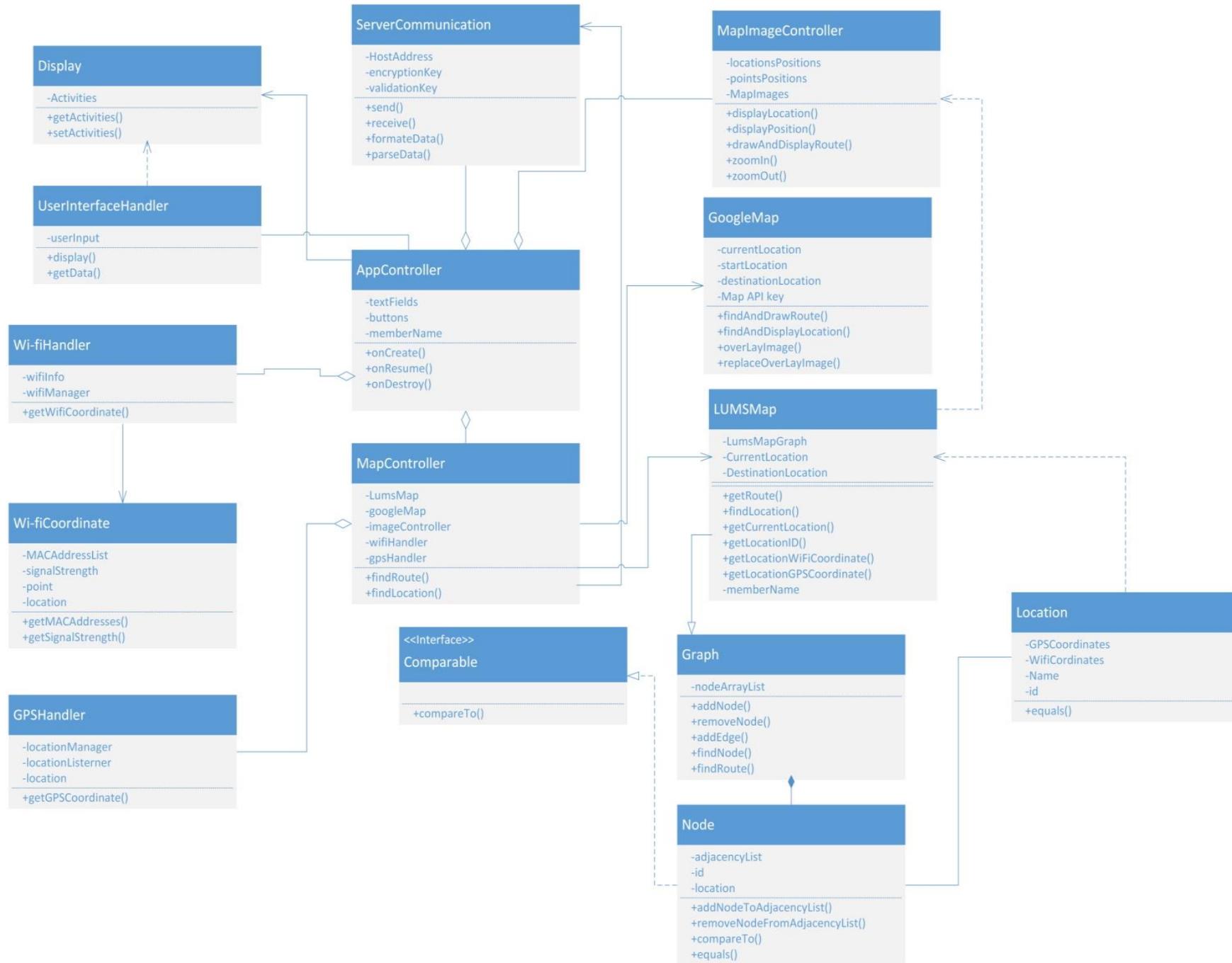


Class Diagram

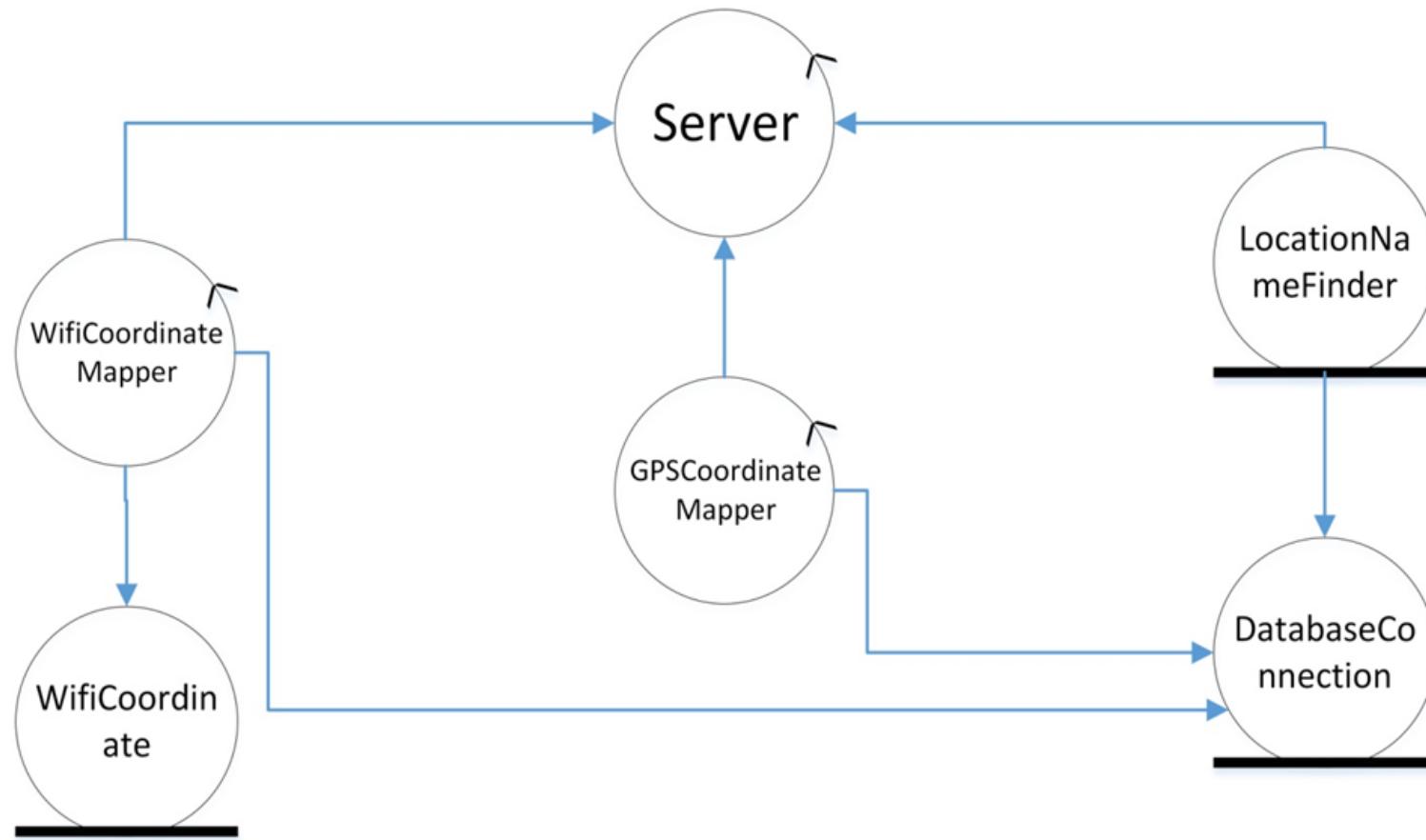


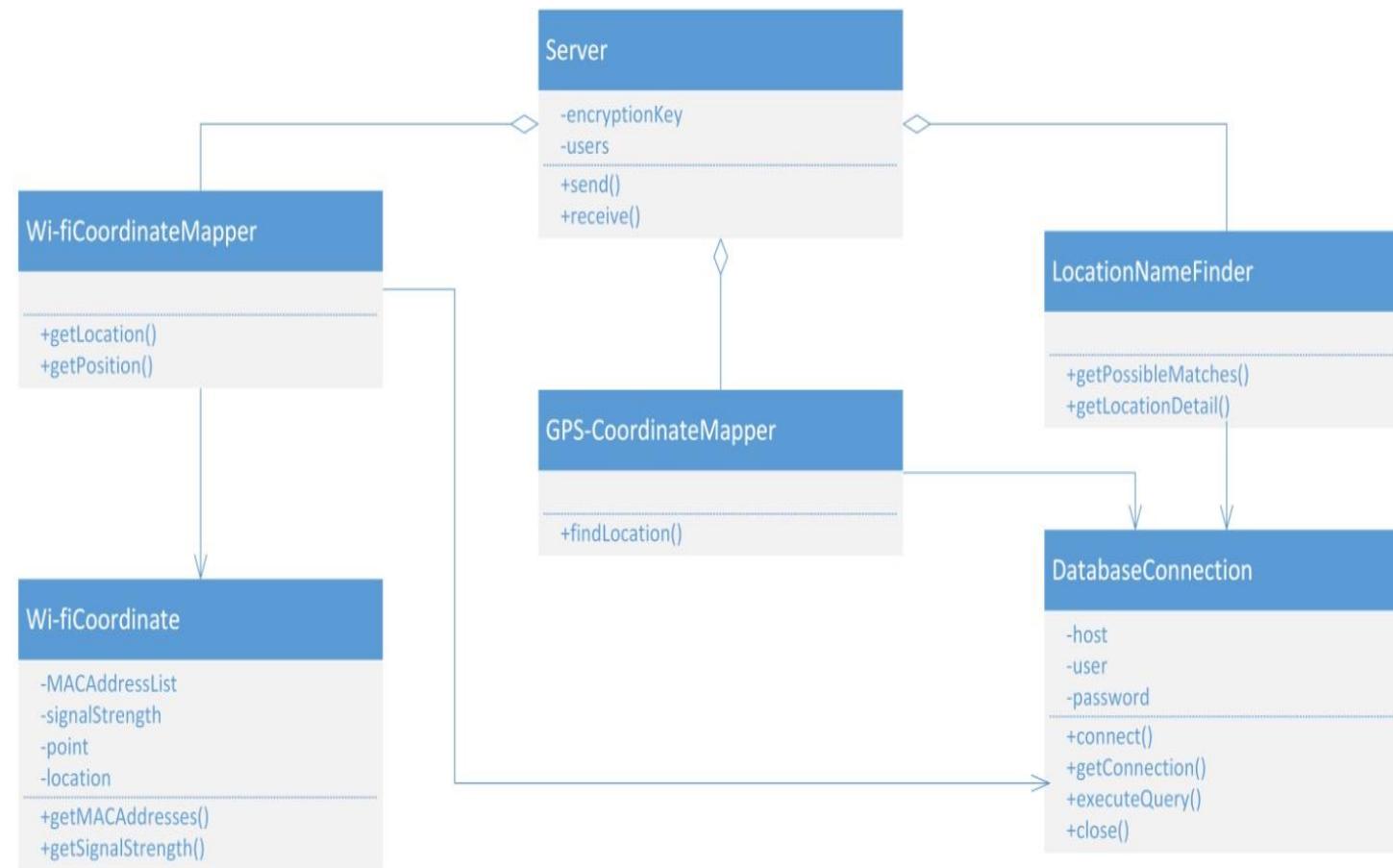
Main App Client Side





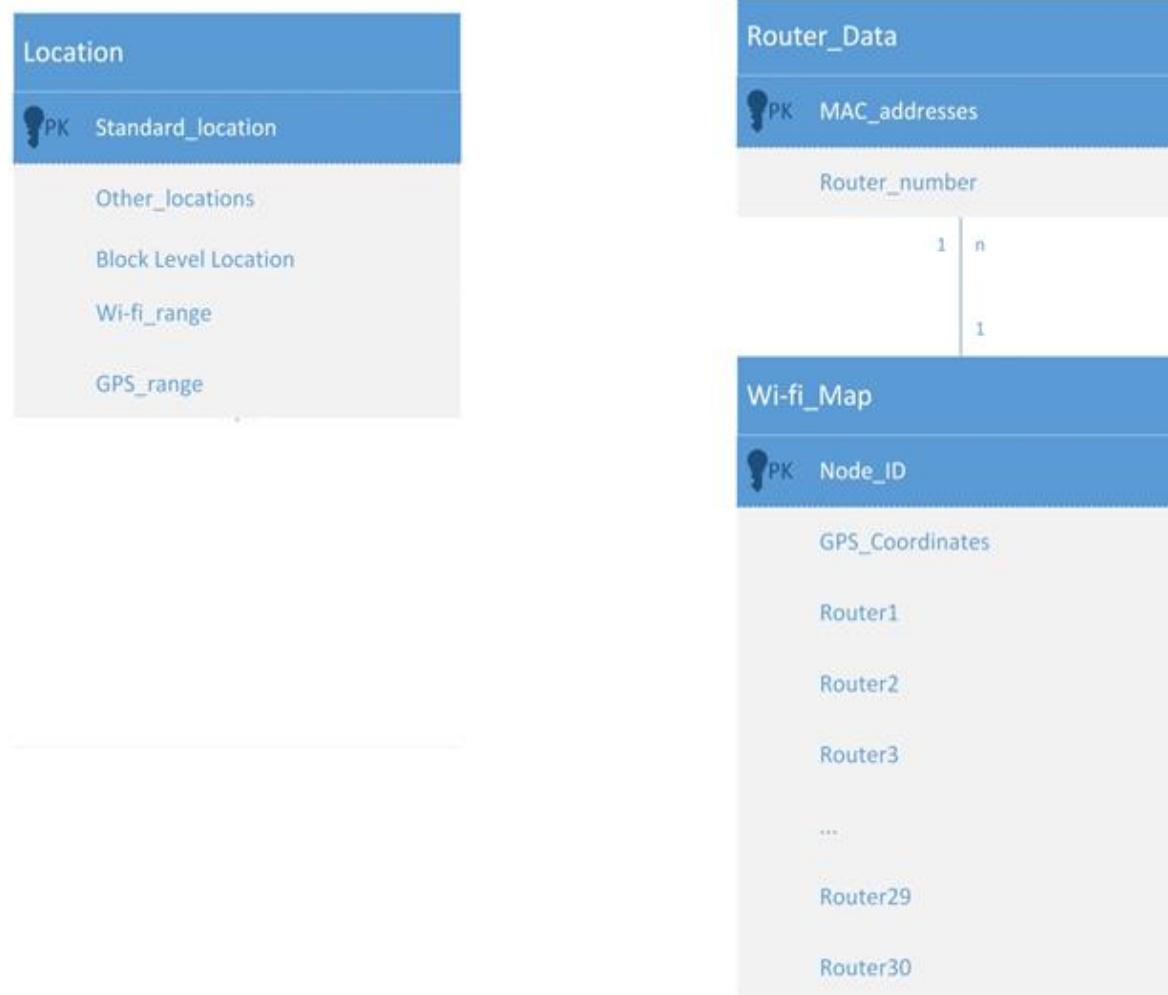
Server Side







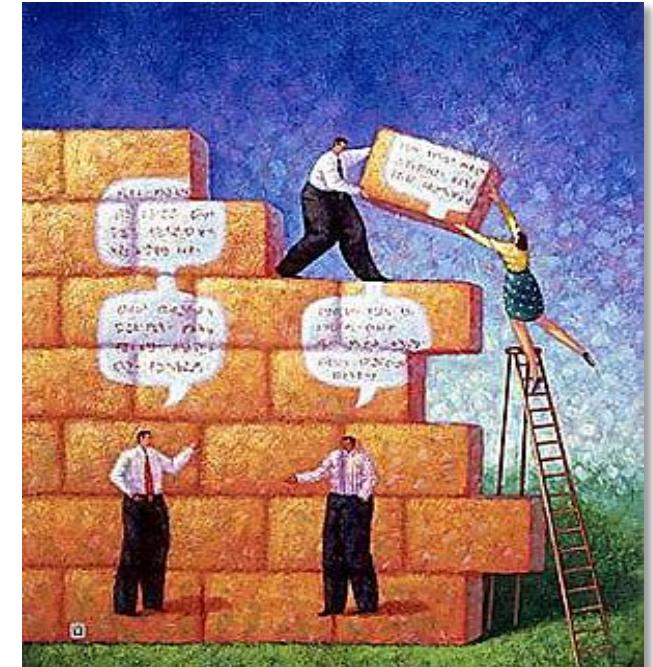
Database Schema



WHY IS OUR PROJECT SPECIAL?



- ✓ For the first time in the history of LUMS, the academic block puzzle has been cracked and solved!
- ✓ Indoor positioning is an active research area nowadays. Companies like **Google** and **Apple** are participating actively in this field.
- ✓ We are going to host free web services related to the work we have done. This will help interested people to build on our work.



WHY IS OUR PROJECT SPECIAL?



- ✓ We have tried our best to make our solution generic so that it can be extended to more challenging places e.g. larger university campuses, shopping centres etc.

- ✓ We are in contact with Google regarding this project; they assured us that if we succeed in implementing this system to a good extent then they will help us install/develop this system for other universities as well.



CAMPUS NAU

THANK YOU