TrojaNow

Introduction
Have you heard of the TrojaNow mobile app? The answer is probably “no” because there is no such thing and we are going to make it!

In this and upcoming assignments we will go through several phases to implement a social platform for our fellow students in the University of Southern California. We will first design it, then analyze it, and then we will implement the application to work on Android.

You will also design the backend server that supports your application, but there is no need to implement that unless you want to. A test server with “dummy” data and messages will be provided to you.

Do not panic if you have no experience in these areas. There will be TA sessions and tutorials with more than enough material to implement both the mobile application and the server side program.

Application Specification
TrojaNow is a social platform to share information and random thoughts via microblogging, just like Twitter. There will be slight differences from Twitter, and of course you will be able to add new features to TrojaNow that you have always wanted to see in Twitter. The main functional requirements of TrojaNow are:

1. The first function will be signing up and logging into the application.
2. Students should be able to share their thoughts just like tweeting or posting something on Facebook.
3. Students should be able to share these anonymously (similarly to Yik Yak) if they want. They can share their name on some statuses and not on others.
4. Students should have the ability to share their environmental information together with their status updates. So, when someone says, “It feels like the North Pole in this classroom”, he/she should be able to share the temperature from his/her cellphone sensors along with the message. (Android, our eventual target platform, has a very reach sensor API.)
5. Having the ability to chat or having a direct messaging system is not mandatory, but it will be taken into account in evaluating your solution. A less polished but more feature-rich app will be considered a reasonable alternative for this multi-assignment project.
6. All functionalities in your mobile application should be supported by the server software.

Architectural Design
In this assignment, you will design the whole TrojaNow system—both the mobile app and server software. In designing this system, everything that has been covered in class should be considered: design strategies, architectural styles, modeling notations, etc.
Choose a style
First, you should choose your architectural style. Students are encouraged to use multiple architectural styles. For example, you can have a style for the overall client and server(s), another one for the backend server program, and yet another for the mobile application. A critical point to keep in mind about picking a style and designing your architecture is that you will have to implement your solution later on this semester.

Choose your components
Carefully consider different components for your architecture and the responsibility for each of them in the system. Select connectors that fit best with your architecture. Remember to use guidelines discussed in class and the textbook (e.g., separation of concerns) to help you come up with a reasonable set of components. For example, for enabling people to share their environmental information, a good approach may be to consider a sensor center component instead of directly calling the system API every time you want sensor data.

Deliver your architecture
You should use UML to design your architecture. This is the main deliverable for this assignment. Different aspects and qualities of your architecture will be evaluated, such as completeness, maintainability, portability (e.g., you should be able to port your application to the iOS reasonably easily), etc. Be careful to completely explain your design decisions, the reasons behind them (i.e., the rationale), and their pros and cons.

Deliverables
Your assignment should contain the following information:

1. **Application Functionality:** Explain in plain English what functionalities you want to implement and your ideas to make the application better with any additional functionalities.

2. **Architectural Styles:** Explain your architectural styles chosen for this assignment. All styles should be named and the reasons for using them should be explained. You should use at least two styles. These may be styles discussed in class or found online.

3. **Architectural Breakdown:** Name your components and briefly explain their responsibilities and your rationale for including them. Your architecture should at least have 7 components on the client side and 3 components on the server side. These numbers are minimum targets and you do not need to limit your design to them.

4. **UML Design:** Your architecture must be designed by a UML diagramming tool. You may use Visual Paradigm Free Trial, ArgoUML, XTEAM, or any other tool. The diagrams you need to produce for your application are as follows:
   a. Components Diagram to explain the system structure
   b. Class Diagram for the mobile app that will be used as the basis of implementing the application.
   c. At least three sequence diagrams that show process flow between different components in a use case.
   d. At least three sequence diagrams that show interactions among mobile app classes.

5. **Downstream Plans:** Explain your plan to implement the application. If you have are not confident about this part, do not worry. Just try to explain how you would like to continue the process of making your own app. This is a feedback question to help us understand how we can assist you in subsequent assignments.