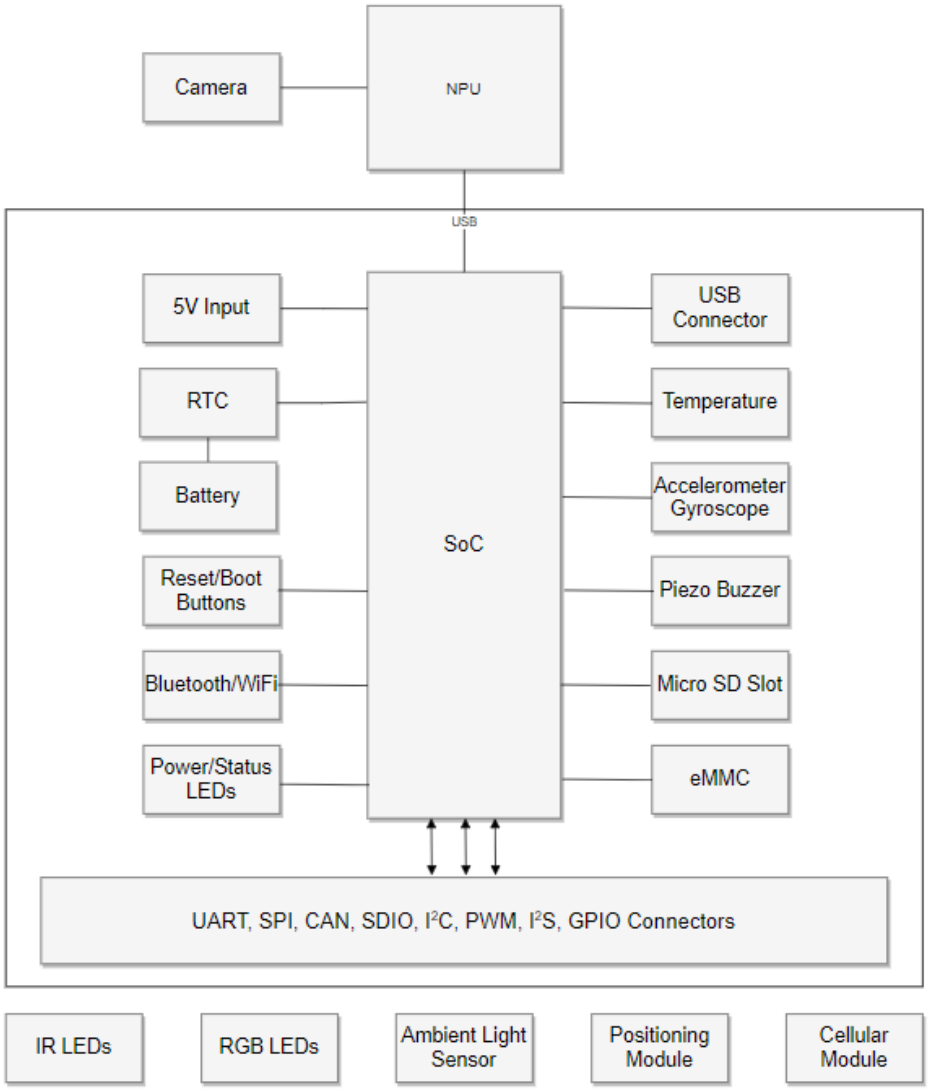
IoT Software Engineer Test Questions

For a Luna IoT solution, you have the following diagram showing the hardware architecture.The product is a small-footprint, battery-powered device running Embedded Linux that integrates computer vision, high-precision positioning (GPS/GLONASS/etc), cellular communication (4G), and other features and is designed for use in ride-sharing electric scooters.

Answer the following questions and submit detailed documentation and code.

1. You are tasked to design an architecture for an application that controls and manages the hardware. The application collects data from the aforementioned hardware components, stores, and pushes the data to the Cloud backend. Define an architecture for this application and create a skeleton code.



2. The application also communicates with a mobile app via TCP socket. The mobile app can control the hardware by sending commands, while receiving data from the hardware components. Define a communication protocol and develop this portion of the application.

   Implement a server and client daemons which can exchange information over TCP.

   The server should be able to handle multiple clients.

   The client should be able to request the following informations from the server:

   - Temperature;
   - Date;
   - GPS data;
   - accelerometer/gyroscope;
   - Image from camera;
   - Others...

   The server and client can work as a producer-consumer as well. Therefore any client can register a notification which would be sent by the server when any of the above metrics have changed.