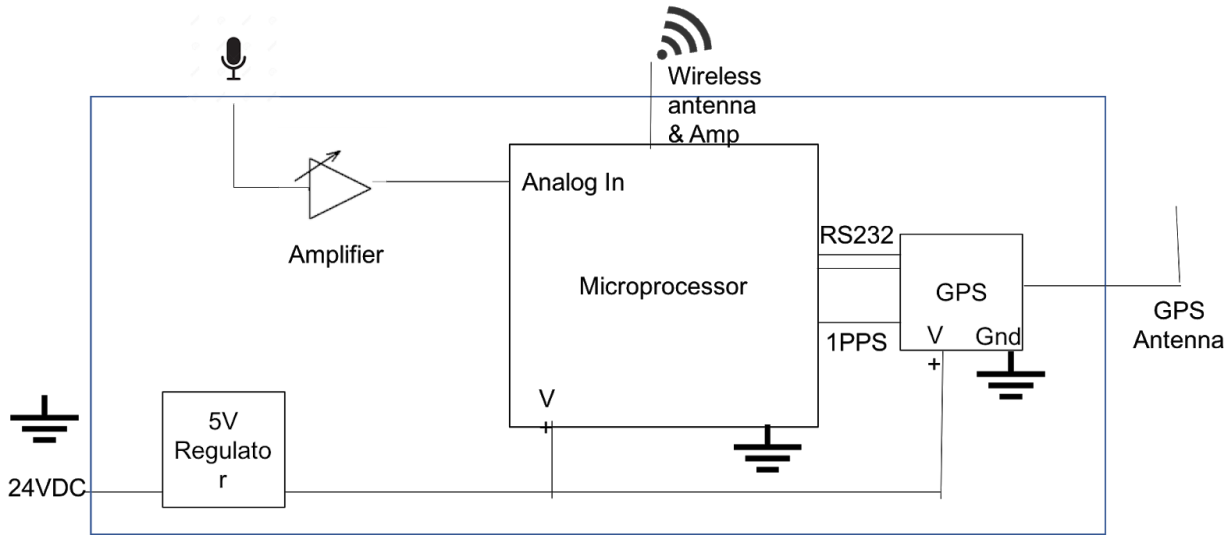
Background:

The military has decided to design and deploy a new gunshot detection and location system. Mobile units must be designed for inclusion into the equipment of each soldier on the battlefield.

Components:

- Microphone, amplifier, and A/D
- Microprocessor
- Power supplies – the equipment provides 24VDC for your use
- GPS with RS232 serial NMEA stream and 1PPS digital signal
- Low bandwidth wireless connection to command/control center via Ethernet interface
- Chassis/case, battery compartment, and antenna



Functional Behavior- This device must:

- Listen to the ambient environment.
- Detect gunfire noise.
- Capture the precise GPS time and location of the unit when the gunshot occurred.
- Provide this information to command/control, where data from multiple units will be aggregated to triangulate the enemy's position.

Your Assignment:

- Provide a high-level software design for the unit (e.g. functional block diagram.)
    - Put as much detail as is necessary for us to understand your design.
- Provide a set of testable requirements for the mobile unit (include requirements for hardware, as well.)
- Provide a set of tests that verify and validate that all requirements are met.

You may choose specific hardware for the components...or assume some generic versions, we leave this up to you. Remember, lives are on the line, so make sure you're thorough. The devil (and credit for your work) is in the details...