Arduino-based Earthquake Detector using Accelerometer

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Problem Statement:

The existing methods for earthquake detection and alert systems have limitations in terms of accuracy and speed. These systems often rely on a network of seismometers that provide data, but the delay in data analysis and communication can hinder the timely issuance of earthquake alerts. Therefore, there is a need to develop a more efficient and reliable prototype system for detecting and alerting earthquake incidents, leveraging an Arduino-based earthquake detector using an accelerometer that can overcome the challenges associated with current methods.

Scope of solution:

The solution to the problem of earthquake detection and alerts involves developing a prototype system that utilizes an Arduino-based earthquake detector equipped with an accelerometer. This system will continuously monitor changes in acceleration, enabling it to distinguish seismic activity from normal vibrations. The system will trigger alerts. When the accelerometer data surpasses predefined thresholds, it indicates potential earthquake-related motion. These alerts can be LED indicators, sound alarms, or digital notifications to inform users and authorities promptly. By integrating communication capabilities, the system can transmit alerts to central servers or mobile devices for wider dissemination. The solution aims to provide timely and accurate earthquake detection, enhancing safety and preparedness in earthquake-prone regions.

Required components to develop solutions:

1) **IDE Name:** Arduino IDE (Integrated Development Environment)
2) **Software:**

Arduino IDE (for writing and uploading Arduino code)
Tinkercad (for designing and simulating electronic circuits, including Arduino projects)

3) Hardware:

- Arduino UNO
- Accelerometer ADXL335
- 16x2 LCD
- Buzzer
- Bread board
- LED
- Power Supply 9v/12v
- Berg sticks male/female