Fall detection system

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Abstract

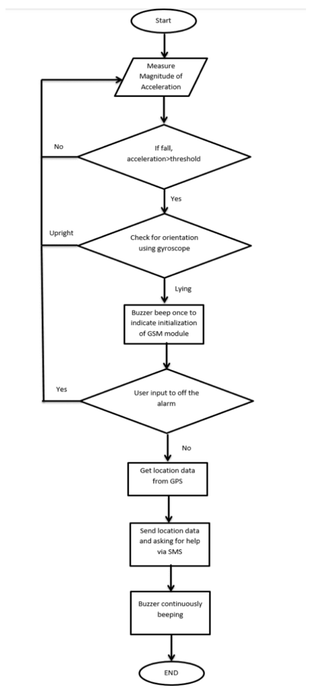
- Falling down is one of the important main problem faced by Helpless individuals.
- Elderly people who are living independently have a high risk of falling and injuring themselves.

Introduction

- Older people tend to fall more than once, especially when they live alone.
- In the event of a fall accident, medical care should be provided immediately to reduce the risk of falling from serious injuries that could result in death.
- So we developed an intelligent and effective fall detection and alarm system using a smartphone and wireless sensors.

Method

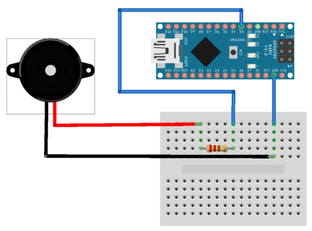
- The measurement of the acceleration and stability value of the device is constantly checked.
- After falling, the bell is activated for approximately 10 seconds.
- If the buzzer is stopped, this means that the person is in good health.
- But if the buzzer is not stopped within the specified period of time, a text message is sent to the care team by coordinating his location so that he can be assisted as soon as possible.

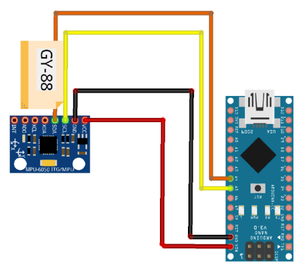


Result

Fall Detection System:

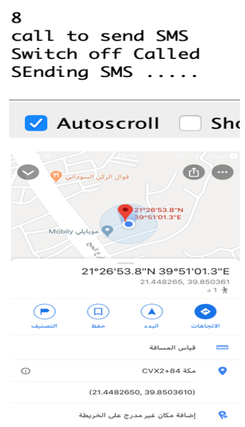
- The GY-88 Accelerometer and the buzzer was used with Arduino Nano to detect user fall before moving to healthcare alert for help.
- When a fall occurred, the measured acceleration by the sensor needs to be higher than a certain threshold in order to trigger the alarm which in this case the buzzer.
- In order to obtain data, it requires us to carry the device and place it about a meter away and then it falls.
- must be the stability of the device while holding it in order to capture acceleration data.





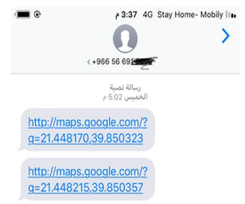
GPS and GSM:

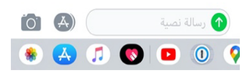
- The connection of Arduino Nano with GSM and GPS Model, In order to get the location data.
- This enables the location data to be transferred from the GPS/GSM to Arduino.
- The values are then inserted in Google search engine and it shows the current location where the device located.

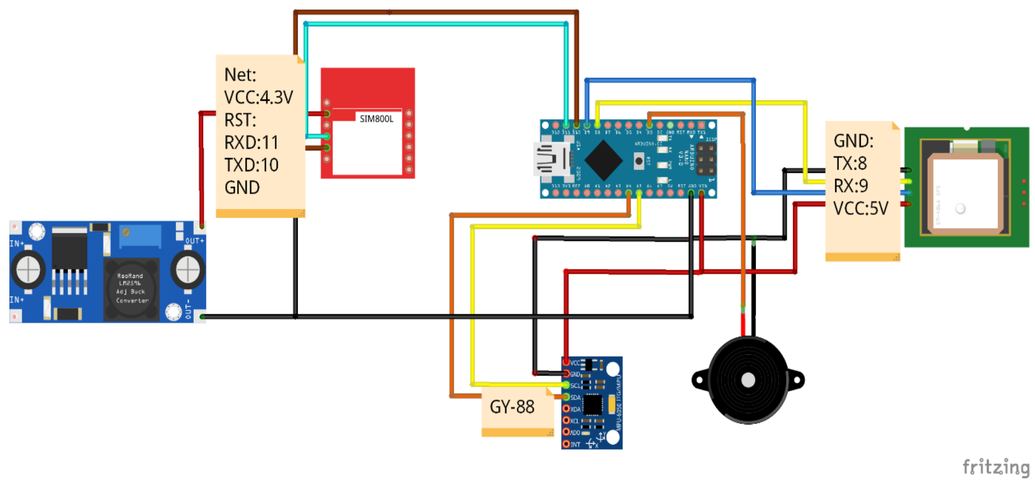


Alert System:

- After a fall is detected, it is important to alert the nearby healthcare center and the relatives of the user regarding the fall.
- In this image, the short message service (SMS) from the GSM / GPS shield to our phone.
- The user can stop sending the SMS by pushing the RESET button after hearing the first beep.



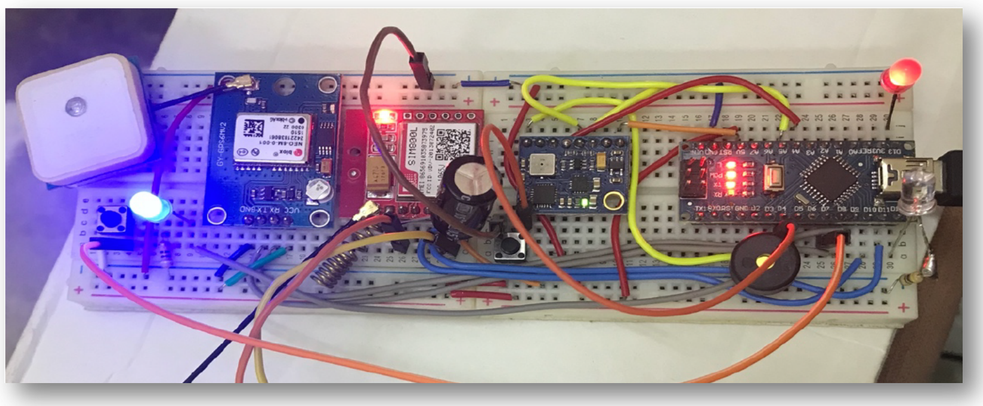




Circuit Diagram

Conclusion

- The device is a single unit device that comprised of 3 different subsystems which are location tracker, fall detection and alert system.
- The fall detection system is attached to a person body using body strap.
- The device is based on a kinematic technique which utilized accelerometer and gyroscope.
- If the device is designed as a wrist strap, the user can easily comfortably practice his daily life.



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