

Design and Implementation of Portable Electrocardiograph

SUPERVISOR :

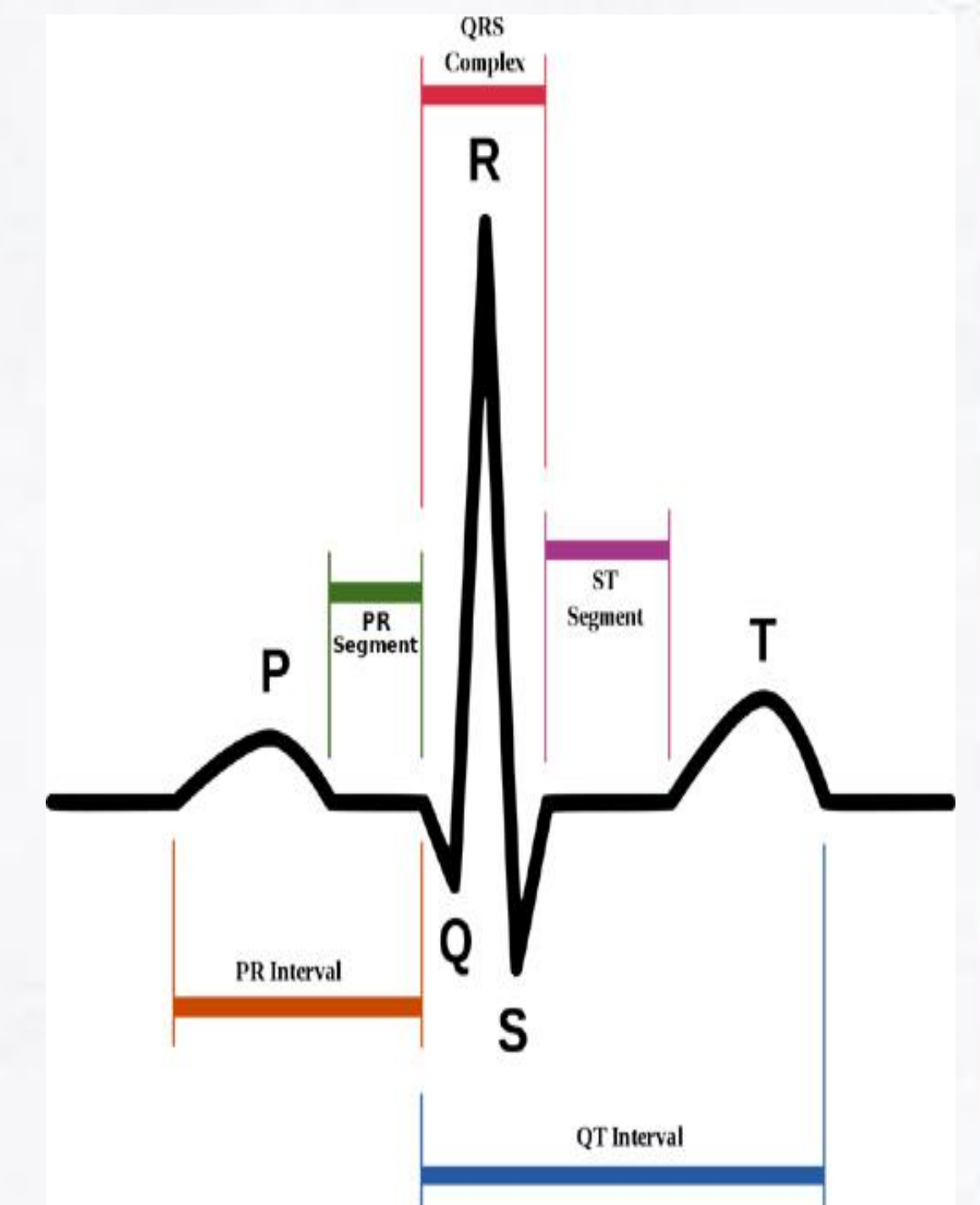
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ABSTRACT :

Heart diseases are becoming a big issue for the last few decades and many people die because of certain health problems. This can be prevented by analyzing or monitoring the electrocardiogram (ECG) signal at the initial stage. So we present this project, i.e ECG Monitoring with AD8232 ECG Sensor & Arduino with ECG Graph. The AD8232 is a neat little chip used to measure the electrical activity of the heart. This electrical activity can be charted as an ECG or Electrocardiogram. Electrocardiography is used to help diagnose various heart conditions. So in this project, AD8232 ECG Sensor was interfaced with Arduino and the ECG signal was observed on a serial plotter or Processing IDE.

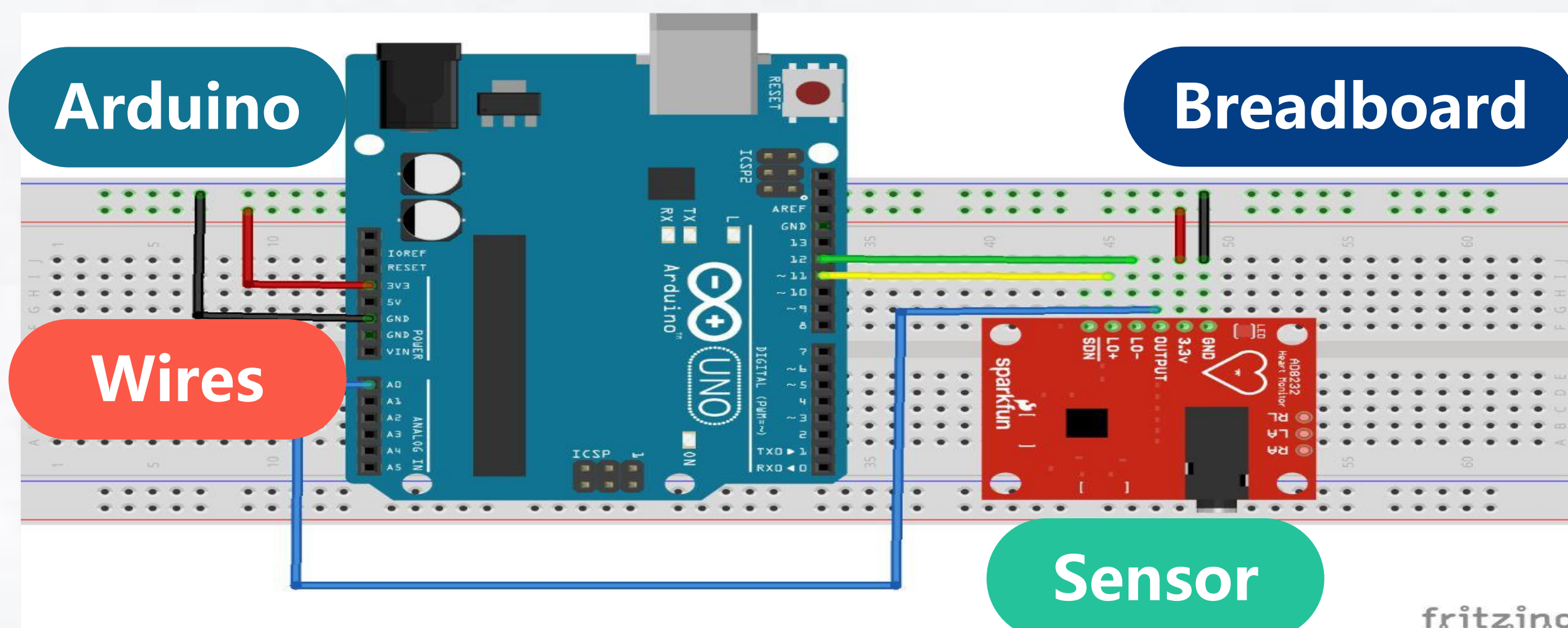


Components :

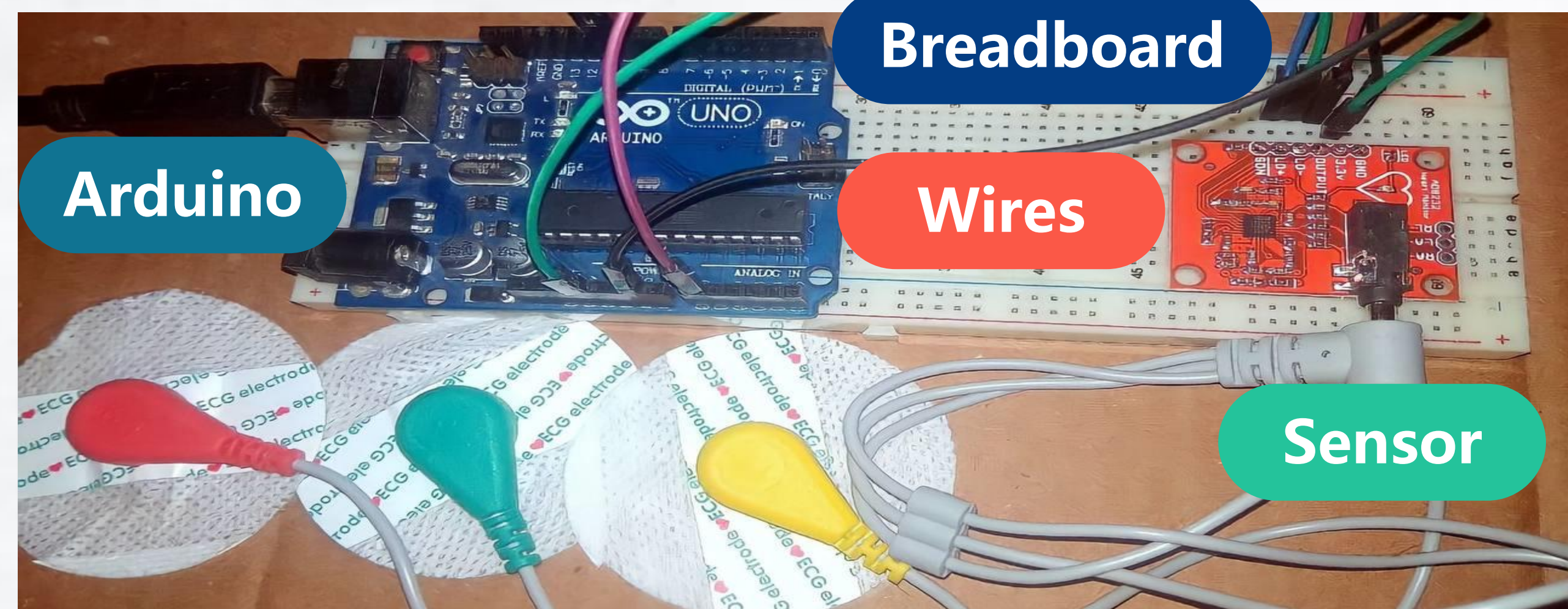
1. Arduino Uno
2. Breadboard
3. connecting wires
4. ECG sensor AD8232



Circuit Diagram :



Final Model :



Operation :

The AD8232 module allows recording the electrical activity of the heart, by obtaining an electrocardiogram or ECG. ECG sensor obtain signals from heart beats because electrical signals are transmitted through specific pathways within the heart, causing the heartbeat. This electrical activity can be collected through electrodes placed on the skin, specifically on the front of the chest, on the arms and legs.

Electrocardiogram :

ECG can be analyzed by studying components of the waveform. These waveform components indicate cardiac electrical activity. The first upward of the ECG tracing is the P wave. It indicates atrial contraction. The QRS complex begins with Q, a small downward deflection, followed by a larger upwards deflection, a peak (R); and then a downwards S wave. This QRS complex indicates ventricular depolarization and contraction. Finally, the T wave, which is normally a smaller upwards waveform, representing ventricular re-polarization.

References :

- [1] World Health Organization. Global Atlas on Cardiovascular Disease Prevention And Control. Policies, Strategies and Interventions. Iraq. 2011. Available from: www.who.int.
- [2] Serhani MA, Kassabi HTE, Ismail H, Navaz AN. ECG Monitoring Systems: Review, Architecture, Processes, and Key Challenges. Sensors. 2020;20. Available from: <https://dx.doi.org/10.3390/s20061796>

Code:

