ARDUINO BASED ULTRASONIC RADAR

Under the supervision of:-

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Prepared For:-

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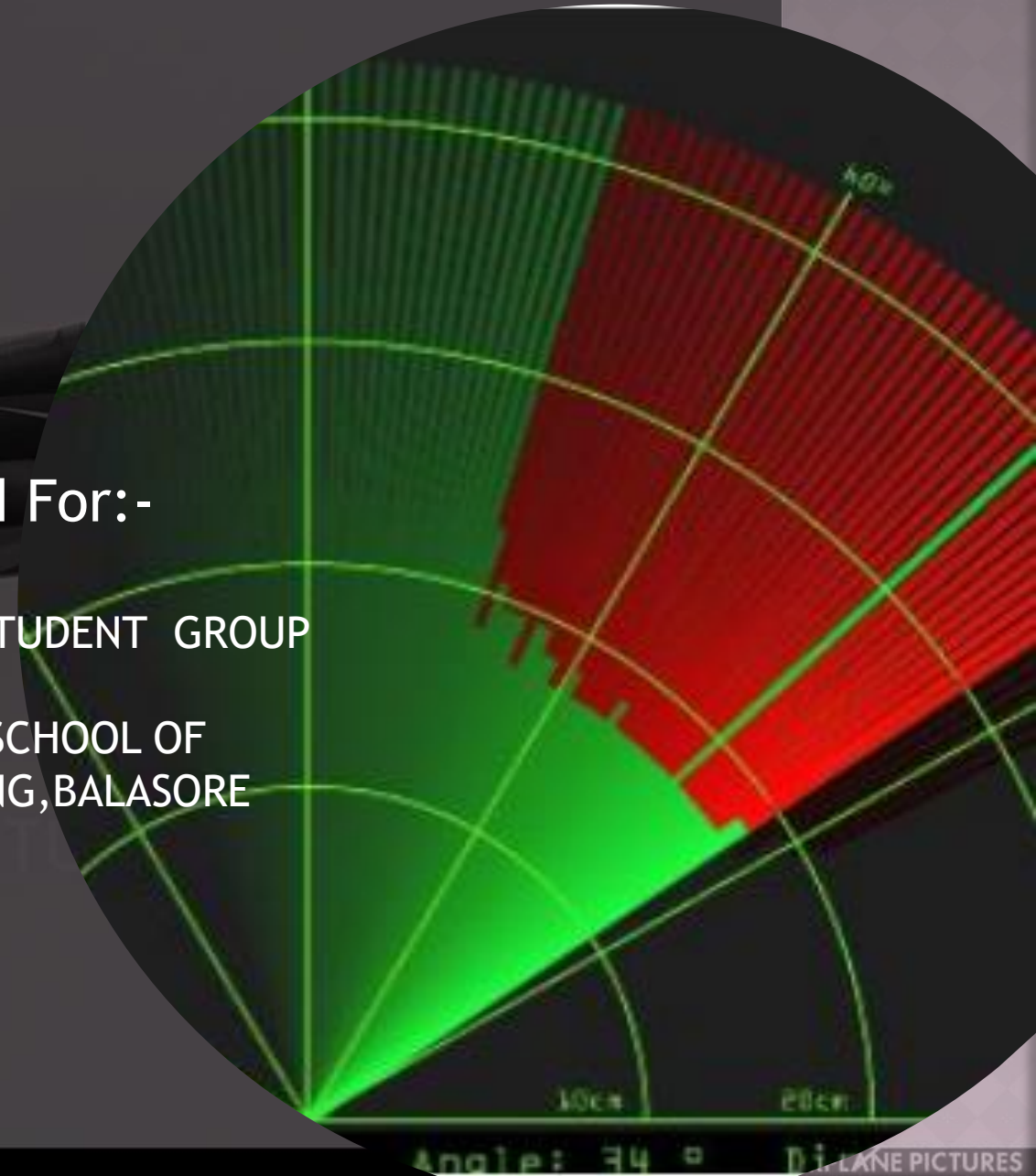

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INTRODUCTION TO RADAR SYSTEM

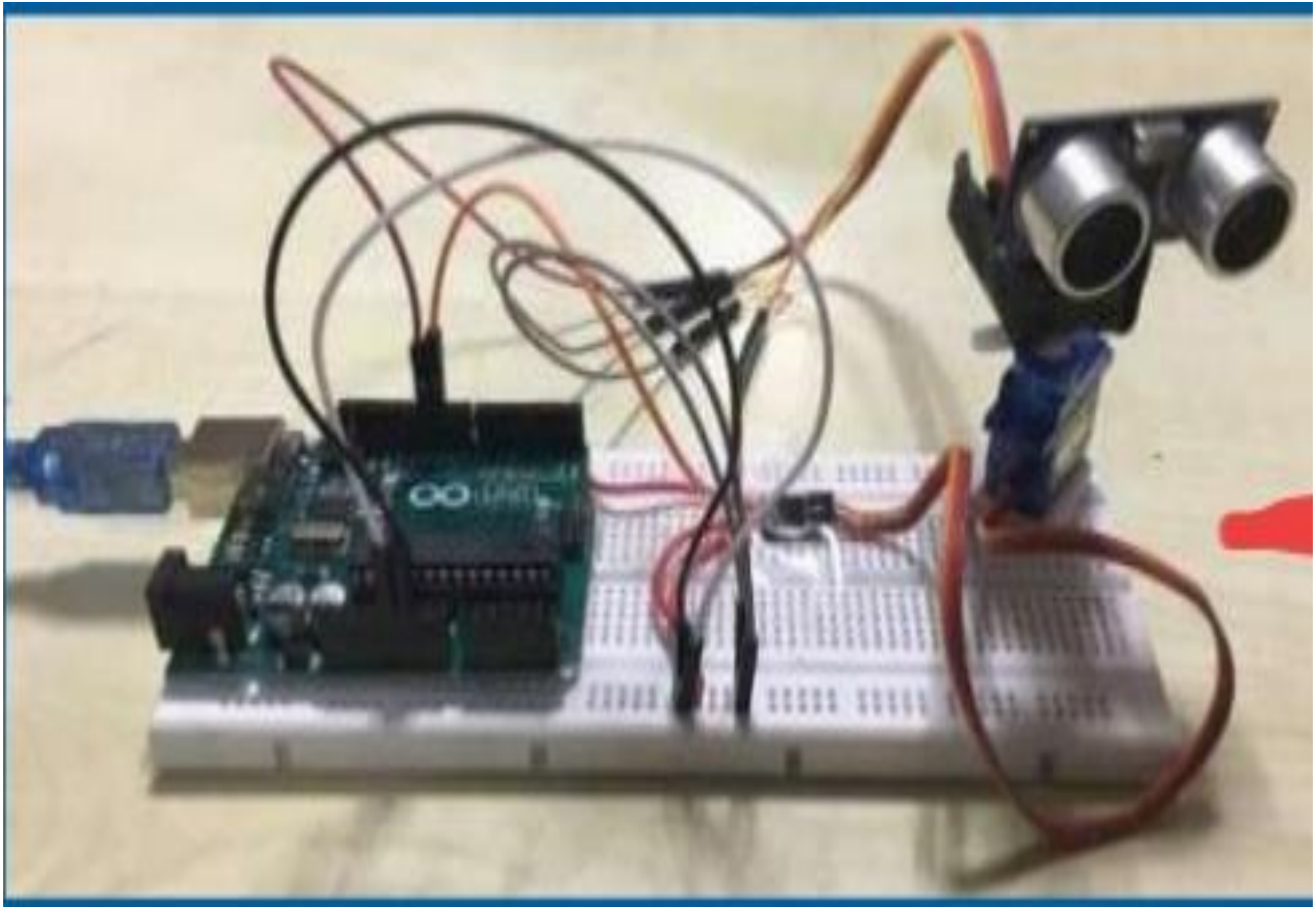
- Radar is a long-range object detection system that uses radio waves to establish certain parameters of an object like its range, speed and position

- Rader is an object detection system. It uses Microwaves to determine the range, altitude, direction, or speed of objects. The radar can transmit radio waves or microwaves which bounce off any object in their path. So, we can easily determine any object in the radar range.

COMPONENTS:

Hardware

- Arduino UNO R3
- HC-SR04 Ultrasonic Sensor
- Servo Motor
- Arduino IDE
- Processing Application

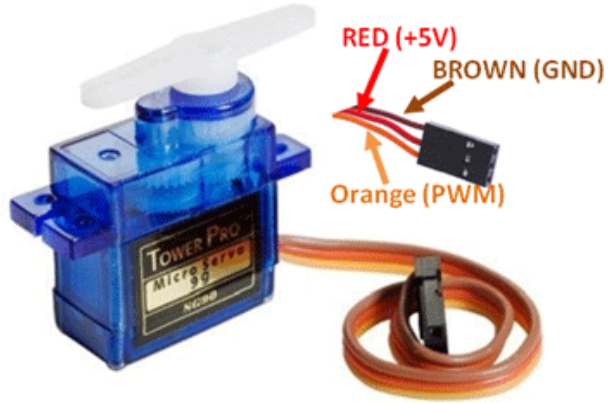


Ultrasonic Sensor:

- We use ultrasonic sensors inplace of radar because ultrasonic sensors use sound waves to detect the object the same as radar uses radio waves find the object distance,angel and range.

Servo Motor:

- The main use of this component is that it is used to rotate our ultrasonic radar. So this is the main purpose of the servo motor in our project



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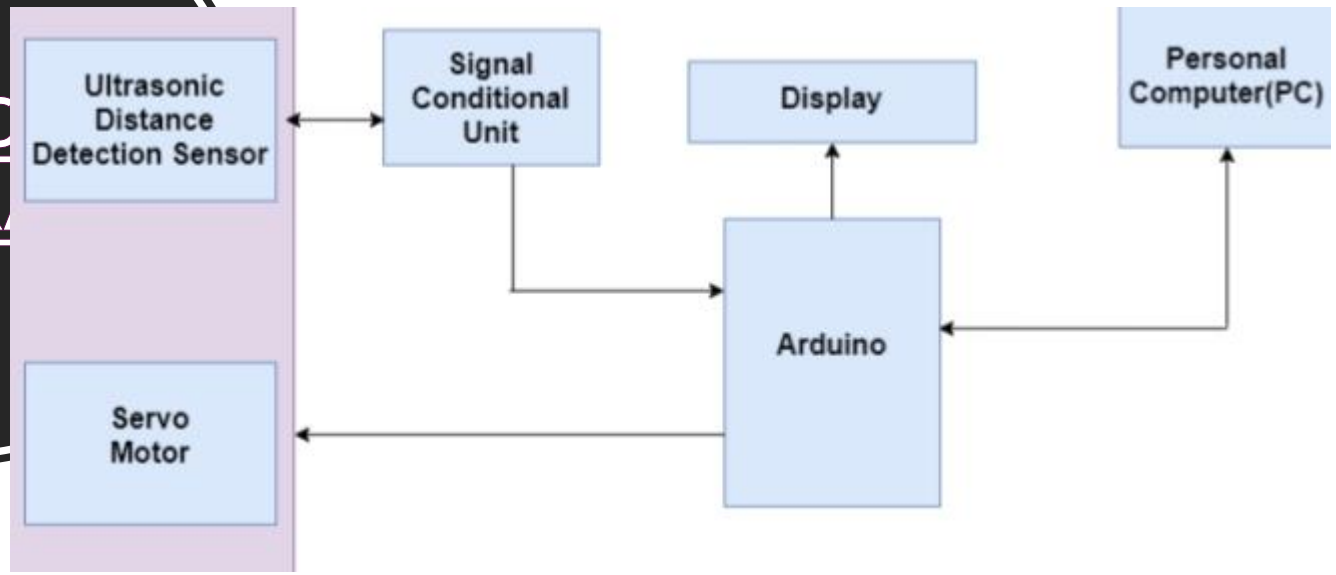
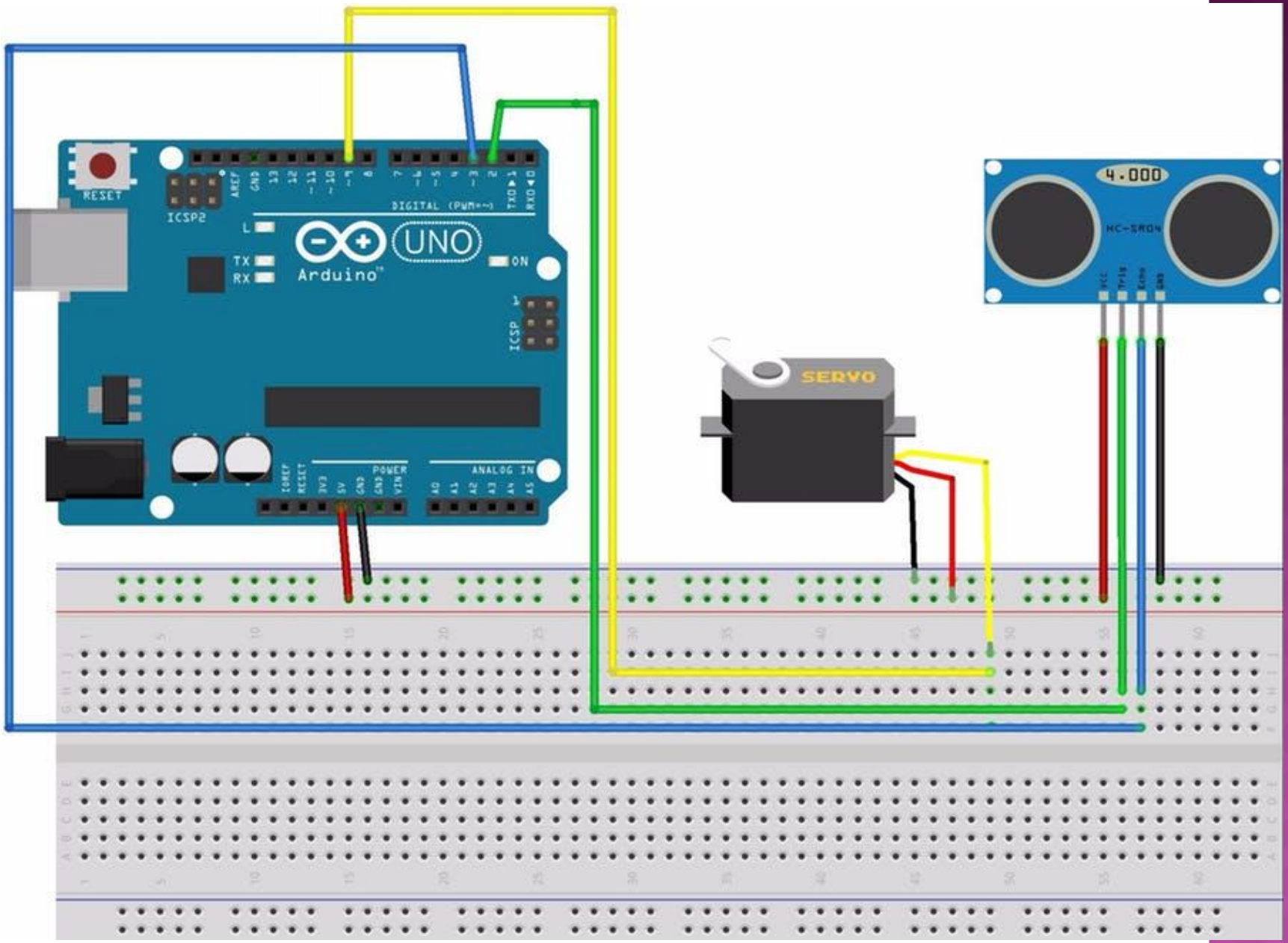

Ultrasonic Distance Detection Sensor
Signal Conditional Unit
Display
Personal Computer(PC)
Arduino
Servo Motor

CIRCUIT DIAGRAM

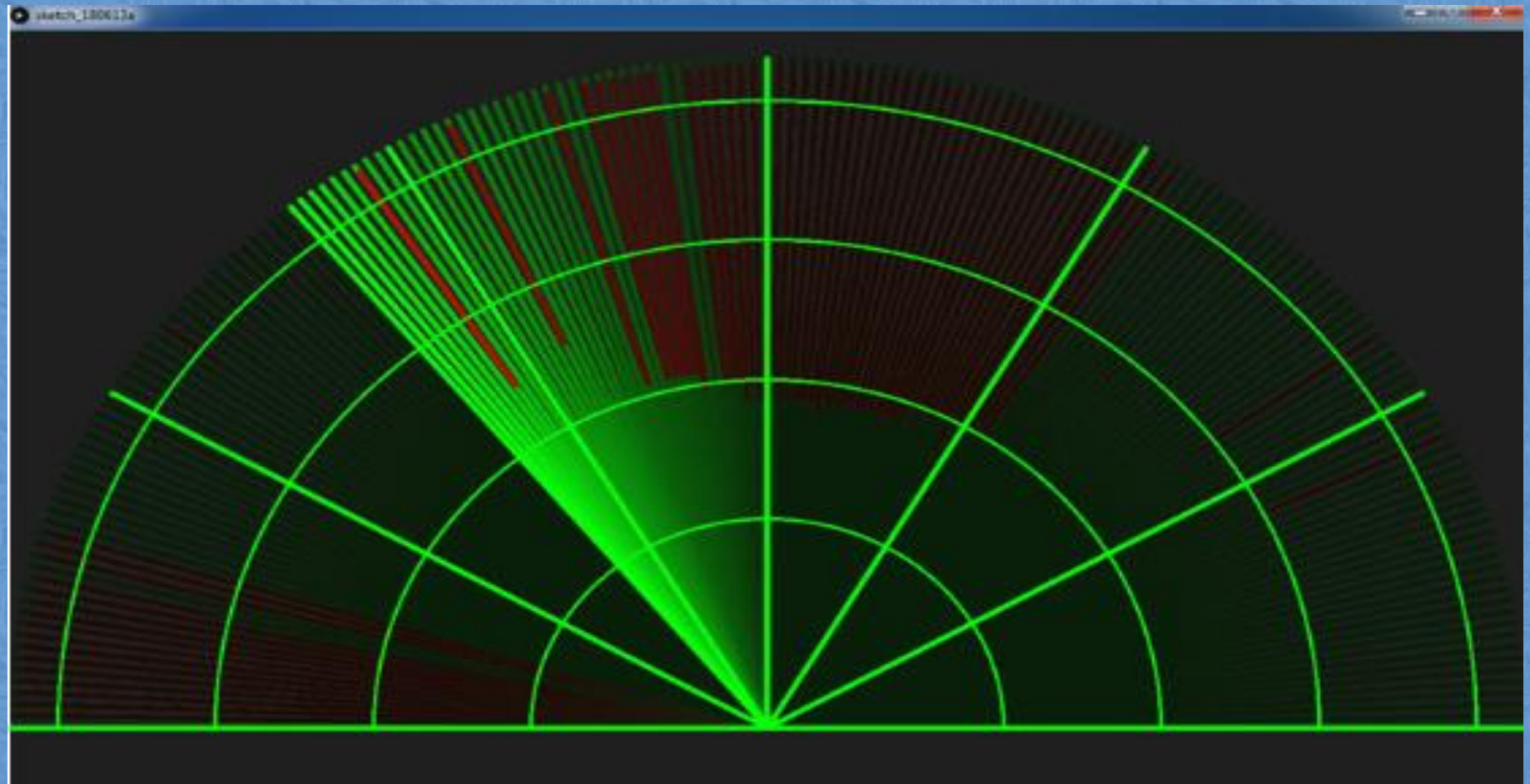


WORKING PRINCIPLE

- In this part we are explaining the working of our project. Firstly we implement all the components and write the codes in our softwares. Then in the next part we connect our project with the personal computer or laptop. Now it starts working. Our radar means the ultrasonic sensor moves with the help of a servo motor. It covers the surrounding areas easily. Now, in the next it notes and records the movement and detects the objects if there is no object it shows onlya green graph and a green line in this graph this is all with the help of arduino. Then we try to check its main working so we put an object ahead of our radar or ultrasonic sensor and when our radar comes in front of this object it will show the red line over the green graph in the pc screen and also shows the distance, angle and range of the object.
- Output of all of this working is called processing, it will display the input/output and the range of the project.

OUTPUT FROM PROCESSING SOFTWARE

- Earlier the output screen was like this:



APPLICATIONS

- Radar is an electromagnetic system for the detection and location of target objects such as aircraft, ships, spacecraft, vehicles, people, and the natural environment which can reflect a signal back.

- The modern radar system is more advanced and the uses of radar are highly diverse. Such as Air traffic control, Air-defence system, Radar Astronomy, Antimissile system, Ocean Surveillance system, outer space surveillance and many more.

CONCLUSION

- RADAR is used to find velocity, range and position of the object.
- Advantages of RADAR is that it provide superior penetration capability through any type of weather condition


THANK
YOU