DIGIMETER
ASSIGNMENT 2

GROUP - 12
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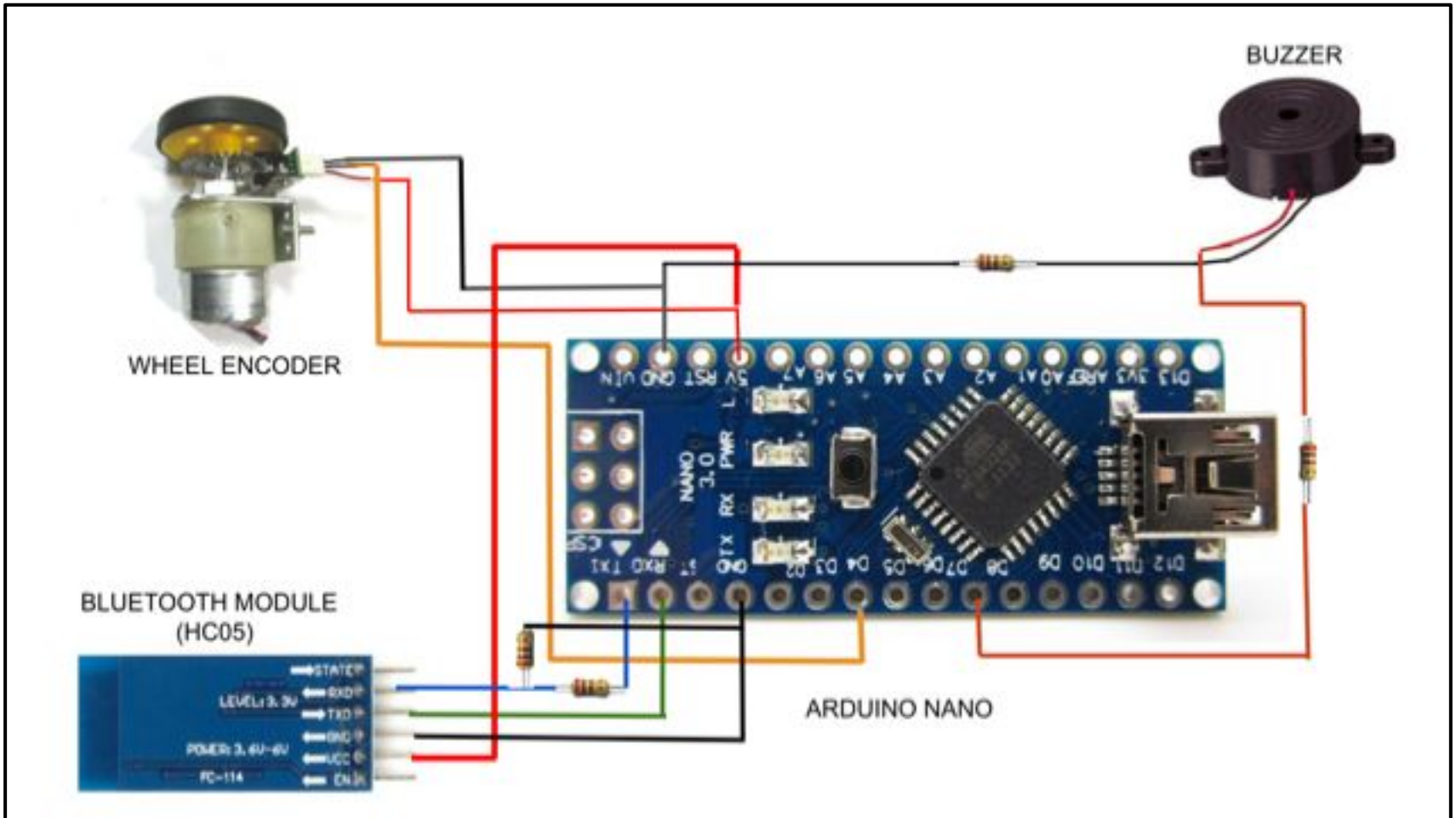
1. ARCHITECTURAL BLOCK DIAGRAM



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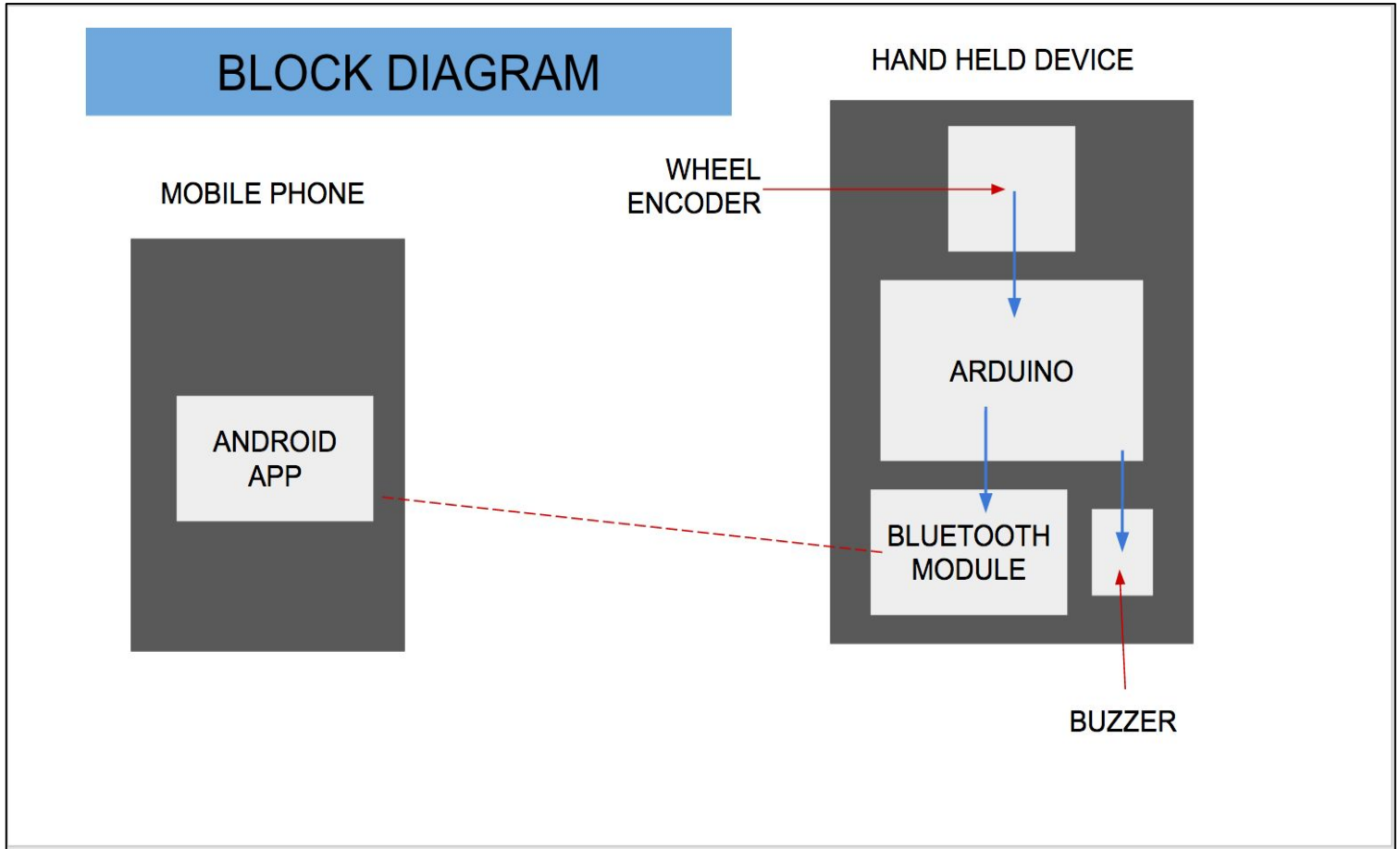


2(a). WORK BREAKDOWN STRUCTURE

1.0 UNDERSTANDING THE SYSTEM

1.1 What to Understand

1.1.1 How are we going to measure distance?

1.1.2 How and where do we display that measurement?

1.1.3 How do we perform the associated function – beep (when measurement is completed)?

1.1.4 How do we wirelessly integrate the device with the display?

1.2 How to Understand

1.2.1 Discussing our idea with electronic technicians, mentors, peers and seniors.

1.2.2 Researching about our project through web-surfing and videos

1.2.3 Finding gadgets that have similar functionality

2.0 PREPARING DESIGN

2.1 Basic Layout

2.1.1 Drawing the circuit

2.1.2 Understanding working of the circuits

2.1.3 Analyzing the placement of components

2.2 Identify the required components

2.2.1 For measuring lengths: Wheel Encoder

2.2.2 Microprocessor: Arduino Nano

2.2.3 Wirelessly connecting the device and display: Bluetooth Module

2.2.4 To mark-out length: Buzzer

2.3 Acquiring the Skills

2.3.1 C programming for Arduino

2.3.2 Java for Android App Development

2.4 Procurement of Components

2.4.1 Research about availability of components

2.4.2 Procure standard components online

2.4.3 Go to the market

2.4.3.1 Exploring various alternative options of components

2.4.3.2 Finalizing the best quality product

2.4.3.3 Purchasing the product

3.0 PROJECT DESIGN

3.1 Digimeter Design

3.1.1 Choose a suitable body for the device

3.1.2 Attach the wheel encoder to the body and connect it to the Arduino

3.1.3 Connect the Bluetooth Module to the Arduino

3.1.4 Connect a Buzzer to the Arduino

3.1.5 Assemble the components in an organised manner

3.2 Developing the App and Incorporating Desired Features

3.2.1 Measuring area and volume

3.2.2 Options for units

3.3 Coding the Arduino

3.3.1 Transfer the received data via Bluetooth Module to the App

3.3.2 Cause the buzzer to produce a sound

3.4 Integrating the System

3.4.1 Combining all units as a whole

3.4.2 Ensuring the compatibility of hardware and software

3.4.3 Checking the performance of the device

4.0 TESTING AND CALIBRATION

4.1 Perform the following tests

4.1.1 Move the Digimeter along a range of lengths

4.1.2 Move the Digimeter along different types of surfaces

4.1.3 Try displaying areas and volumes of different types of objects

4.1.4 Try displaying the results in various units

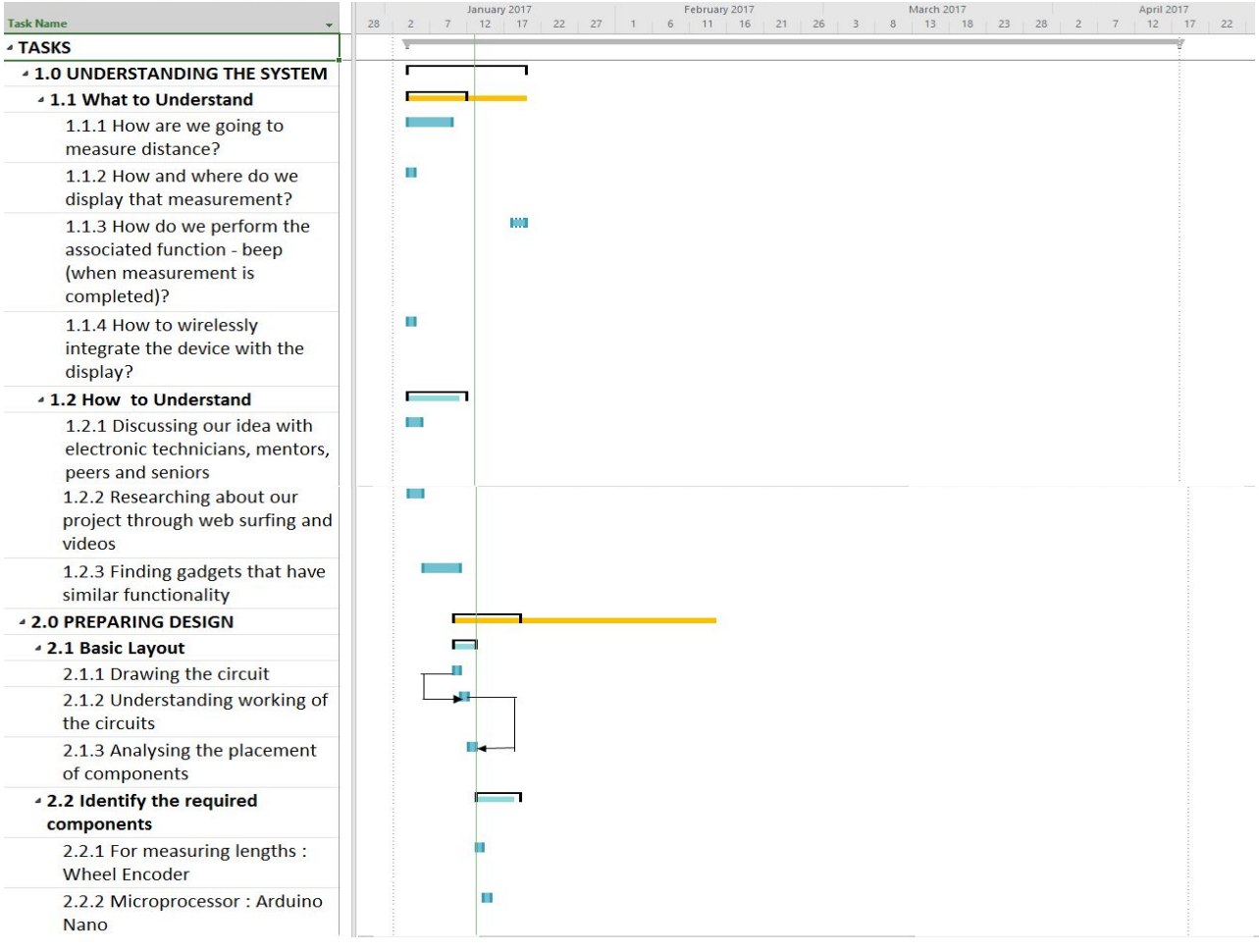
4.1.5 Test the working range of the Bluetooth Module

4.1.6 Test the working of the buzzer

4.2 Make corresponding implementations of the required changes

5.0 REVIEW AND FINALIZATION

2(b). GANTT DIAGRAM



3.3 Coding the Arduino
3.3.1 Transfer the received data via Bluetooth Module to the App.
3.3.2 Cause the buzzer to produce a sound
3.4 Integrating the System
3.4.1 Combining all units as a whole
3.4.2 Ensuring the compatibility of hardware and software
3.4.3 Checking the performance of the device
(Review)Milestone
4.0 TESTING AND CALIBRATION
4.1 Perform the following tests
4.1.1 Move the Digimeter along a range of lengths
4.1.2 Move the Digimeter along different types of surfaces
4.1.3 Try displaying the areas and volumes of different types of surfaces
4.1.4 Try displaying the results in various units
4.1.5 Test the working range of bluetooth module
4.1.6 Test the working of the buzzer
4.2 Making corresponding implementations of the required changes
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5.0 REVIEW AND FINALISATION