

# GROUP NUMBER:12

ROLL NUMBER 1: 200260031

NAME 1: Namita Agrawal

ROLL NUMBER 2: 200260055

NAME 2: Tina Garg

## TITLE: ARDUOGLASS

Send information from your phone to a tiny display that can be mounted on an eyepiece and used as a hands-free heads-up display.

[note: the final project as built may be quite different from your initial proposal. *Everything in this report must refer to the final project as presented in the demo.*]

## ABSTRACT:

< describe your project idea in 5 lines or less >

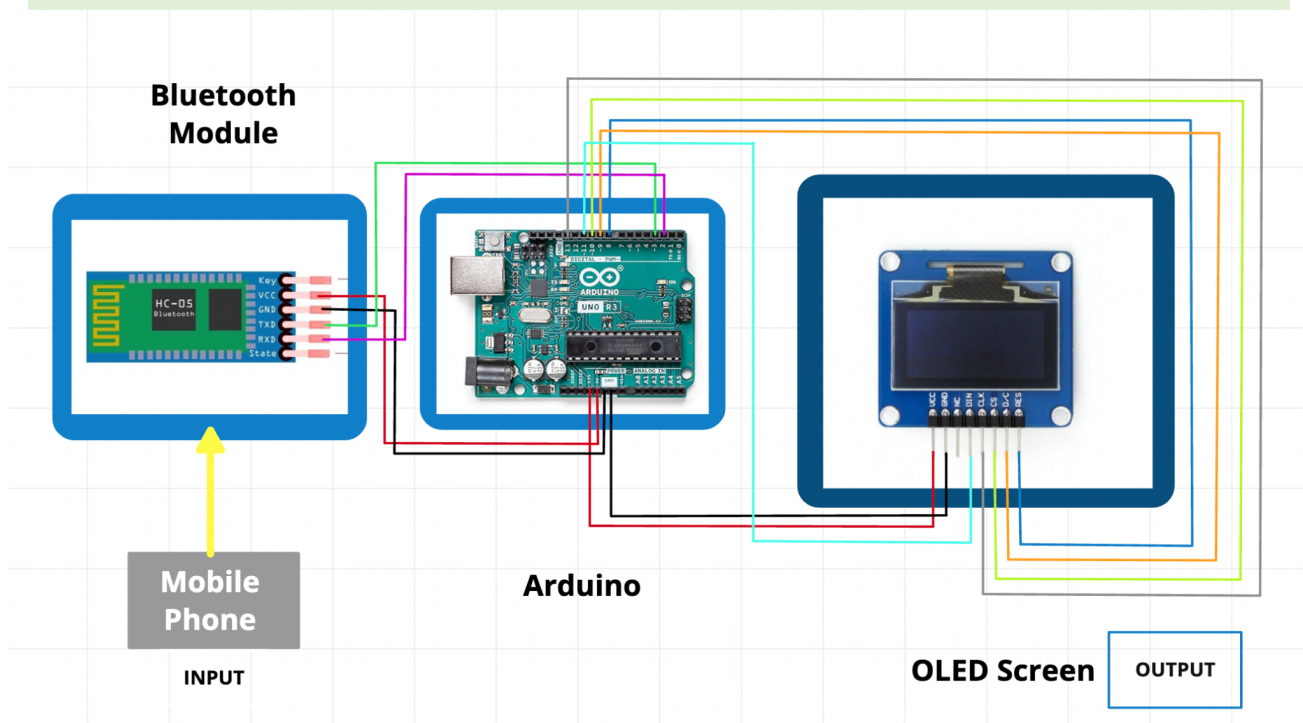
Our project allows a mobile phone to be connected to an OLED display which can be used to display almost anything, from texts, diagrams or notifications with the help of an Arduino. We make use of an HC-05 Bluetooth module to make the connection between the OLED and the mobile phone.

## PROJECT DETAILS:

< Give a detailed description of your project idea >

You must provide a block diagram of the major components of the project.

[1] Use blocks to specify all sensors/input/output elements used. Give the details of the parts used, especially if they are commercially purchased parts (like ultrasonic sensors, LCD screens etc)



mobile phone to the Bluetooth module via Bluetooth. We sent a string to the Bluetooth module via an app.

- OLED display:

This component was used to display whatever we sent from the mobile phone. It received the data from the Bluetooth module via the Arduino. When the overall setup is scaled down, we can mount this display on an eyepiece, resulting in a hands-free heads-up display.

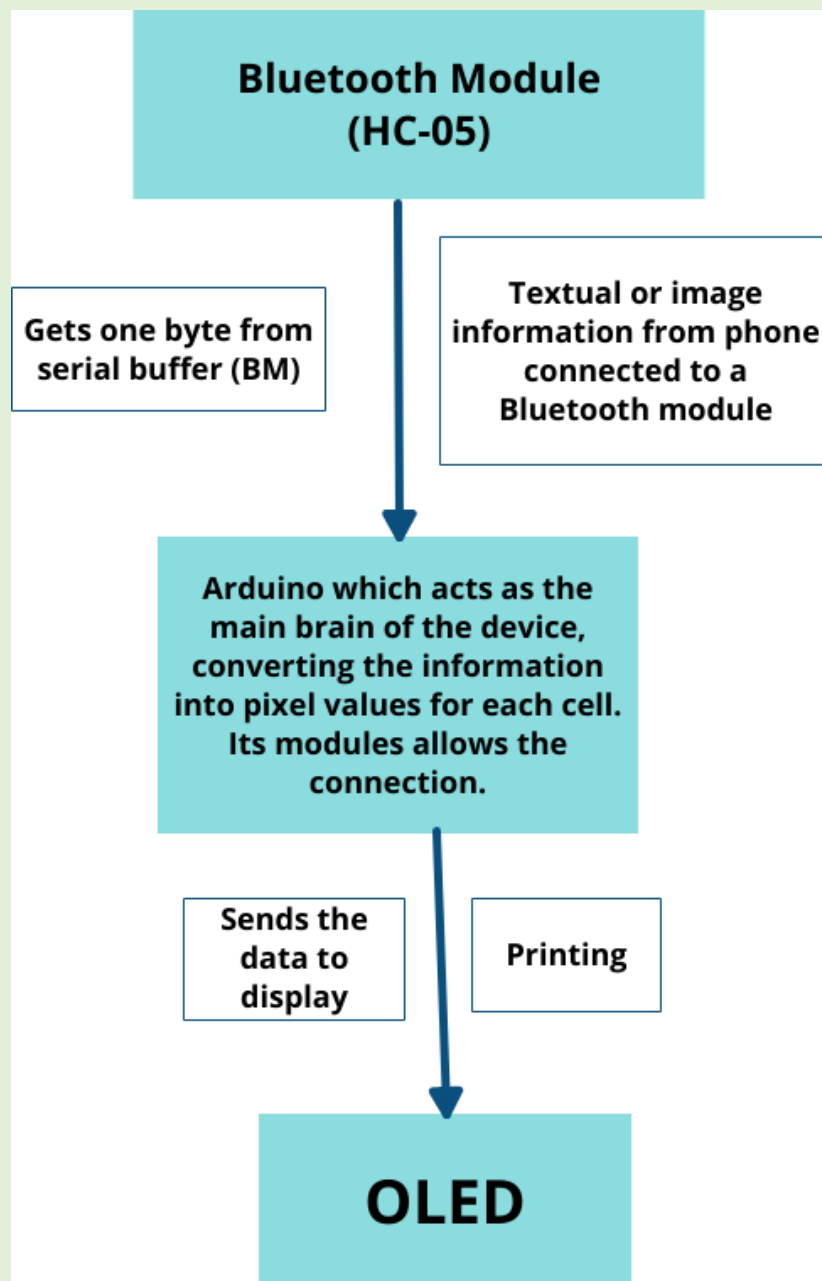
**[2] External bread-boarded circuits should be discrete blocks – give the circuit diagram corresponding to those circuits as sub-figures. Hand-drawn circuit diagrams are *not* acceptable – use a proper software like circuitlab or Itspace etc you have learned in earlier labs.**

We have made one single diagram including all, the block diagrams and circuit connection. The flow of information is as follows:

Input from mobile phone -> Bluetooth module -> Arduino -> OLED display [Output]

**[3] The Arduino with the required algorithm should be in a separate block.**

The algorithm flowchart must be shown here. Program code is to be included as an appendix to the report (see below for format)



Although both of were involved at each step of the project, teh major contribution is as follows:

**Bluetooth module: Tina**

**OLED: Namita**

Combining everything: Both

Mark on your block diagram which group member was responsible majorly for working on which block. Writing 'both did everything' is not acceptable – surely you must have shared workload among the group members. The TA's have been tracking your progress.

**Program algorithm:**

1. Set up the OLED to display information and the Bluetooth module serial to send and receive information
2. Display startup message on the OLED
3. Check the Bluetooth module serial connection
4. Initialize the character buffer to store characters from the Bluetooth module serial
5. Take input and store the input in the character buffer
6. Display the character buffer on the OLED

[4] If your project has significant analog circuits as part of the design, include LTSpice simulation circuit diagrams and simulation result plots of the analog component.

**MAIN COMPONENTS NEEDED TO BUILD THE PROJECT:**

Give an inventory of all the components you used to complete the project. If you needed to purchase some components other than the ones provided in your kit, please mention them separately.

- Arduino Uno
- HC-05 Bluetooth module

**Externally Purchased Components:**

- OLED display

**RESULTS:**

Summarize the results of your project.

Provide photos or links to video recording of your working project output. In the project demo and viva we expect a fully working end-result of your project work. But sometimes a last minute part failure may cause problems. In that case, we would like to see that your project worked at *some* time!

Plus, a photogenic project otsutput ge you a chance to get on the 'Projects Hall-of-Fame' poster board.

To summarize the results, we are able to make a connection of a bluetooth module (HC-05) with the Arduino and between OLED display and the arduino independently. Then in order to make them work together, we had to combine the programs for both, which wasn't very straightforward since while controlling them independently, the host pc and serial monitor were playing a role as well. That's where Arduino comes into picture, to act as the

connecting link. Its various modules and libraries come into handy.

As for a few ambitious additions to the project, we could make it show subtitles, which are recorded by an app by taking input from microphone, if the apps cooperate, we were not able to make them do so in the timeline. Regardless, it can be extended to a lot more applications as well!

Link for the video :

[https://drive.google.com/file/d/1Wb1U4Rw2cK3NP1dTmunY7aNswqe5KM8q/view?usp=share\\_link](https://drive.google.com/file/d/1Wb1U4Rw2cK3NP1dTmunY7aNswqe5KM8q/view?usp=share_link)

Link for the images of result.

<https://drive.google.com/drive/folders/1nbZmHWYXCRf0hIB5rMH5vwM2nbt4ZDE6?usp=sharing>

## **APPENDIX:**

Program code is to be put here in the following fixed width font. Note that the code must be well commented and self-explanatory. The following is a shining example of well-written code: (the color coding of functions is just a cosmetic add-on for readability)

```
#include <U8x8lib.h>           // Include the U8x8 library
#include <SoftwareSerial.h>     // Include the Software Serial library for the Bluetooth module

// OLED Pins
#define OLED_CLK 13
#define OLED_DIN 11
#define OLED_CS 10
#define OLED_DC 9
#define OLED_RES 8

// Bluetooth module pins
#define BT_RX 2
#define BT_TX 3

U8X8_SH1106_128X64_WINSTAR_4W_SW_SPI display (OLED_CLK, OLED_DIN, OLED_CS, OLED_DC, OLED_RES); // Setting up the
OLED with the OLED Pins

SoftwareSerial mySerial = SoftwareSerial(BT_RX, BT_TX); // Setting up the
Bluetooth serial with the Bluetooth module Pins

String data; // Variable to store the buffer coming from the Bluetooth module serial connection

void setup() {
    display.begin(); // Starting the display
    display.setFont(u8x8_font_chroma48medium8_r); // Setting the font
    display.clear(); // Clearing the display
    mySerial.begin(9600); // Starting the Bluetooth module serial connection
    display.print("This OLED is ready!"); // Display startup message
}

void loop() {
    while(mySerial.available()) { // Checking availability of the Bluetooth module serial connection
        char c = mySerial.read(); // Getting character buffer from the Bluetooth module serial
        if (c != -1) {
            data += c; // Store the characters from the character buffer into the data string
            if (c == '\n') { // Detecting the end of line
                display.clear(); // Clear the display
                display.print(data); // Show the data string on the display
                data = ""; // Clear the data string
                break;
            }
        }
    }
}
```

```
}  
}  
}  
}
```

[Here](#) is a link to the file.