

# Lab 4: Pong

ESE519/IPD519: Introduction to Embedded Systems  
University of Pennsylvania

In this document, you'll fill out your responses to the questions listed in the [Lab 4 Manual](#). Fill out your name and link your Github repository below to begin. Be sure that your code on the repo is up-to-date before submission!

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**GitHub Repository:** `lab4-zhixia`

1. In 4-line serial interface, the data packet only contains transmission byte, and the control bit D/CX is transmitted by the D/CX pin. If D/CX is "low", the transmission byte is interpreted as a command byte.
2. To display 65k colors (16-bit), the data packet transferred its value by two consecutive transmissions.
3. Its usage is to set pixel memory address and write into RAM. Parse and send array of commands through SPI.
4. With 16-bit color, the screen can display as many as 65k colors. But for 24bits, it is over 16M colors. The loss is quite significant, with a decrement of 3 color depths for red and blue and 2 for green.
5. There is no need to use debouncing here.

**All demonstrations are showed on Friday Nov. 19 to one of the TAs.**

## Part F

The user is able to choose Wi-Fi module and joystick as he/she wish: no need to unplug anything to reach that goal.