
# Boston University
# Electrical and Computer Engineering
## EC464 Senior Design Project

# Final Test Plan

# VETCON
# BADGE


**By**

**Team 32**

**Team Members**

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# Equipment & Setup:

The equipment used for our prototype testing followed the hardware and software specifications listed below.

**Hardware:**

1. 2 Texas Instruments (TI) MSP430FR2433 LaunchPad™
    a. 16 bit MCU
    b. 20-pin LaunchPad Kit Standard Leveraging The BoosterPack Ecosystem
    c. On-Board eZ-FET Debug Probe
    d. 2 Buttons And 3 LEDs For User Interaction
    e. 2 HC-05 Bluetooth Modules
    f. 2 LCD Alphanumeric Displays
2. 2 Computer/Laptops
3. 2 Micro USB Cables
    a. Connection Between MSP430 & Computer
4. Arduino, Wires, Resistors, and Extra LEDs for Testing

**Software:**

1. Visual Studio Code
    a. Source Code Editor
2. PlatformIO
    a. Cross Platform / Cross Architecture IDE tool
    b. Embedded Application Software Development
3. Scripts
    a. C++ Script, main.cpp
4. Package Extensions
    a. Monitoring Button State & Debouncing
5. Github Pages
    a. Hosting Of Web Games

**Setup:**

The setup for our final testing was very simple. One of our team members cloned our Github repository with our prototype code from the testing branch. The project was then opened with PlatformIO on the Visual Studio Code IDE. Following this, the MSP430FR2433's were connected to 2 team members' computers with the

micro USB cable. Using PlatformIO, the project was built and flashed onto both boards, ready for demonstration. Furthermore, a breadboard with correct pin connections to the 3 LED's, LCD, and Bluetooth module was set up for each MSP.

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## Testing Procedure:

1. Initialize the MSP + software (build, upload, and monitor)
2. Demonstrate option 1 (Set Name Tag)
    a. Demonstrate that repeating option 1 prompts message that name has already been set
3. Demonstrate option 2 (Display Name Tag)
4. Demonstrate option 3 (Game Link)
    a. Demonstrate the Dino Game
    b. Show winning condition secret code
5. Demonstrate option 0 (Reset)
6. Demonstrate secrets
    a. Show a secret username through option 1
    b. Select option 3, prompting "access denied"
    c. Select 'secret' option 9, unlocking option 3 in the menu
    d. Enter secret token from game 1, changing LED1 state
7. Demonstrate option 4 (Game Link 2)
    a. Demonstrate the coin flip game
    b. Select option 6 again and enter secret token from game 2, changing LED2 state
8. Demonstrate Game 3 using code from Game 2
    a. Demonstrate the game
    b. Select option 7 again and enter secret token from game 3, changing LED3 state
9. Demonstrate saved data between device power states
    a. Disconnect device from power and show that it is fully off
    b. Reconnect device to power and show the information saved in the previous session
10. Demonstrate option 8 (Bluetooth)
    a. Show bluetooth communication between both MSP's
    b. Demonstrate exiting the bluetooth menu

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## Measurement Criteria:

1. VETCON BADGE displays on startup
2. “WELCOME TO VETCON 30” is printed to the LCD
3. Main menu displays in terminal
4. User can select from given options
5. User can enter name to nametag
6. User’s name can be displayed on the LCD
7. Game link(s) can be retrieved
8. Online game(s) run (Game 1,2,3)
9. Secret phrase can be retrieved on winning the game(s) (Game 1,2,3)
10. All LED’s turn on corresponding to their secret phrase being entered
11. Users can send and receive data by Bluetooth
12. User can reset badge
13. User can select to abort / continue with reset
14. User can power off and on the badge without data loss