Team Agreement

EC463/EC464 - Senior Design

Fall 2021 – Spring 2022

We, the members of team number 32, called VETCON Badge, have entered into a project titled VETCON Badge for the customer, VETCON, as part of Senior Design Project, ENG EC463/EC464.

The general objective of our project is:

The general objective of our project is to create a unique, functional, and production ready badge for our client, VETCON, to distribute and use at the upcoming DefCon 30 in August, 2022.

We expect that our <u>major</u> project deliverables will include the following:

1. A functional badge that:
    - Is less than 4”x4”x1” in size and less than 150g in weight.
    - Has a functional operating system to manage microcontrollers.
    - Is able to operate continuously for an average of 21 hours.
    - Utilizes point-to-point networking.
    - Has USB-C capabilities.
2. A bill of materials needed to produce the badge we have designed.
3. A badge manual with assembly and operating/installation instructions.
4. A badge production process for mass badge production.

GENERAL CRITERIA FOR SUCCESS

We understand that evaluation of our work in Senior Design will depend on several factors. First is our team's success at meeting our proposed objectives, as described by our specifications, and providing our deliverables in working fashion, with the required documentation, by the course deadlines. Second is our demonstration of individual proficiency at design and at keeping adequate engineering records of our work. Third is our individual and collective team skill in listening, helping others to reach their goals, and negotiating technical and team problems. Finally, we understand the department policy for reimbursement of expenditures made in executing our project and agree that anything spent about the amount reimbursed by the department will be equally shared among all team members.

INDIVIDUAL LEADERSHIP

We understand that Senior Design teams shall be organized to give each member clear responsibility for one or more design areas. Several people may collaborate on a problem, but only one person should be the designated 'leader' for a design area. Each of us should be the leader of at least one design area so that we can clearly demonstrate our individual proficiency in design and in keeping professional engineering records (in our logbooks).

RESOLVING TEAM CONFLICTS

We understand that we need to work to resolve interpersonal and technical disputes within our team, in a professional and respectful manner. This will sometimes involve compromise, and we agree to be open to reasoned technical arguments about our individual areas and the team's collective efforts. We will seek faculty or mentor help when problems appear serious and are not resolved quickly by our efforts.

NON-PERFORMANCE OF DUTIES BY A TEAM MEMBER

We understand that each of us must pursue our design and team tasks in a professional and timely fashion to ensure our team's success. Should a team member fail to show diligence and concern for the team, a meeting of the team and the course faculty will be held to assess the situation and recommend specific short-term performance goals for the team member, and

possibly the whole team. If these goals are not met, the course faculty may decide to remove the offending team member from the team. The student will then have to complete the course reporting directly to the faculty as a team of one. This is a serious step and suggests a significant failure on the part of the individual, and possibly the whole team. It should not be considered except as a last resort.

QUESTIONS

We understand that students and teams are welcome to approach the course faculty about this agreement at any time.

INDIVIDUAL TEAM MEMBER RESPONSIBILITIES

The remaining pages list our team members and our individual 'leader' responsibilities.

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: (printed) Julian Padgett

Team Number 32 Team Name: VETCON Badge

I have read this entire document, including my teammates' descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature:

Date: 11/29/2021

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

My responsibilities include:

Research and implementation of serial UART communication on MSP430FR2433, as well as assisting with the programming of the UART menu in c++ using PlatformIO. I spent most of my time researching MSP430 examples and attempting to create custom UART programs for our badge. When we switched to PlatformIO, I wrote the code for several "secrets" in the menu for users to discover at DefCon.

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: (printed) John Kircher

Team Number 32 Team Name: VETCON Badge

I have read this entire document, including my teammates' descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature

_____

Date: 11/29/2021

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

My main responsibilities on this project include 1) UART/Serial communication on the MSP430FR2433, 2) Design for the UART menu once users interface with the badge, and 3) Team lead for the in class project presentation and the PDRR document.

For my first responsibility, I took lead researching and using the MSP430 launch programs to advance from the basic UART programs to a program custom to our design. This included tons of debugging and monitoring of receive and sent transmitter flags within the CCS IDE. However, it is important to note that once our team switched to the cross architecture platform for embedded systems, PlatformIO, UART communication became much simpler since PlatformIO utilizes the Arduino methods and functions for easy serial communication.

For my second responsibility, I helped program the UART menu in PlatformIO. Using Arduino, which is written in C++, allowed me to create a fluid menu that was interactable using serial input. Furthermore, the menu incorporates hidden secrets that users can discover as well as functions to activate the LCD, debounce buttons, and reset flag variables.

Finally, for my third responsibility, I wrote the script for the in class project description and gave the speech to the rest of the ECE class. Being team lead 1, I also constructed and worked with the writing tutors on the PDRR.

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: (printed) Carlos Ortiz

Team Number: 32 Team Name: VETCON Badge

I have read this entire document, including my teammates' descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature _____

Date: 11/29

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

One of my main responsibilities is working on kiCAD in order to build a PCB for the badge, and ensuring our components all fit and work correctly on the PCB. I was also responsible for coding one of the minigames, specifically the Dino Run game, and ensuring it ran smoothly.

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: (printed) Derek Barbosa

Team Number: 32 Team Name: Vetcon Badge

I have read this entire document, including my teammates' descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature _____

Date: 11/29/21

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

My responsibilities include the following:

Thoroughly understanding the board-layout for debugging as well as incorporating general knowledge of the TIMSP430 EXP-FR2433's pinouts; developing FRAM-related functionalities for the software component. I was then responsible for writing a "bootloader" for the initial system startup as well as incorporating ASCII graphics on-boot. I also am responsible for developing a main-menu loop using quasi-REPL methodology and assisting with hosting web games on a dedicated web server.

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: ___Ryan Sullivan___

Team Number: _32_ Team Name:__VETCON BADGE__

I have read this entire document, including my teammates' descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature: _____

Date: _____11/29/2021_____

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

My responsibilities include development of persistent variable storage, utilizing the FRAM functionality of the MSP430FR2433, as well as the development of the bootloader. These responsibilities include research into the FRAM capabilities of the board as well as implementation and improvement of the bootloader on the board that handles program selection and navigation.