



GSoC 2018 Student Application - LabLua

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Country : India

Institution : National Institute of Technology Karnataka (NITK), Surathkal

Project Selected : Interrupt-based drivers in Céu-Arduino for Cortex-M0 microcontrollers

PREREQUISITES

The program and circuits for the given link are explained in the comments of the code. The circuit diagrams are also attached in png format inside samples/prerequisites where the codes are present.

Create a simple example in Céu-Arduino using some sensors and actuators (not necessarily using interrupts) :

Link :

https://github.com/mnaveenkumar2009/ceu-arduino/blob/master/samples/prerequisites/sample_ledtimer.ceu

Create a simple example in C that uses interrupt-driven analog reads.

Link :

<https://github.com/mnaveenkumar2009/ceu-arduino/blob/master/samples/prerequisites/IDAR.c>

BASICS

1. What is your preferred e-mail address?

mnaveenkumar2009@gmail.com

2. What is your web page / blog / github?

[GitHub](https://github.com/mnaveenkumar2009) : <https://github.com/mnaveenkumar2009>

3. What is your academic background?

I am an undergraduate pursuing my Bachelors of Technology in Electrical and Electronics at National Institute of Technology Karnataka, India.

4. What other time commitments, such as school work, another job (*GSoC is a full-time activity!*), or planned vacations will you have during the period of GSoC?

Most of the coding period is during my college holidays and I would be able to take up GSoC as a full-time activity. I currently have no planned vacations and am free for the entire coding period.

EXPERIENCE

1. What programming languages are you fluent in? Which tools do you normally use for development?

I am fluent in C++ and C and have been coding in them for 4+ years. I use Visual Studio Code for development purposes. For C++/C codes and programming contests I use [CodeChef IDE](#) or [IdeOne](#) for non run-time inputs.

I am also familiar with JavaScript, Python and JAVA and have used them for development.

2. Are you familiar with the Lua programming language? Have you developed any projects using Lua?

I am not familiar with the Lua programming language and haven't developed any projects in it. I have studied Céu from the manual, the language required for the project I have selected from LabLua (Interrupt-based drivers in Céu-Arduino for Cortex-M0).

3. Have you developed software in a team environment before? Any projects with actual users?

Yes, I have previously interned at Savemonk where I worked for web development as a team of 3 members. Savemonk currently has a user count of 50000 users and growing.

4. What kinds of projects/software have you worked on previously? (anything larger than a class project: academic research, internships, freelance, hobby projects, etc.)

I have previously worked in an internship at Savemonk where I worked on web development and have developed CRM portal for the start-up. I have also worked on projects during hackathons and technical clubs. They include a female safety android [app](#) and a dyslexia assistant [web application](#). They are available on my GitHub profile.

5. Are you (or have you been) involved with any open source development project? If so, briefly describe the project and the scope of your involvement.

No, this is my first time applying to GSoC and wanted to get started with open source contributions.

PROJECT

1. Did you select a project from our list? If yes, which project did you select? Why did you choose this project? If you are proposing a project, give a description of your proposal, including the expected results.

Yes, I have chosen Interrupt-based drivers in Céu-Arduino for Cortex-M0. I have chosen this project because of my interests towards microcontrollers and coding. The idea of having a reactive language ceu as an alternative to C fascinated me. The ceu language being relatively new with less contributors gives me an opportunity to learn a lot and contribute more to it.

2. Please provide a schedule with dates and important milestones/deliverables, in two week increments).

The following schedule has an increment of 1 week for better clarity . All the Interrupt based drivers development mentioned in the milestones refer to Cortex M0 microcontrollers. I have chosen ethernet shield as an additional (not mentioned in the project ideas list) library for the project due to its popularity and necessity in many projects of arduino. I have added the same in month 3 for development.

Week	Milestone
Community Bonding Period (Pre Coding Period)	Get to know the mentors and people in the LabLua community. Familiarise more about Ceu Arduino and the Cortex M0 microcontrollers and go through previous GSoC project where ISR was implemented on ceu-arduino.
1	Develop interrupt-based drivers for ADC (Analog to Digital Convertor) and test it.
2	Develop interrupt-based drivers for SPI and I2C buses and test them.
3	Develop interrupt-based drivers for EEPROM and Real Time Clock and test them.
4	Create more examples for the new drivers created and Bug fixing + Documentation of the work done in weeks 1-3.
End of Month 1 Start with the libraries built on top of the above drivers	
5	Develop interrupt-based drivers for RF transceiver and test it.
6-7	Develop interrupt-based drivers for various interrupt driven sensors and accelerometer and test it.
8	Create more examples for the new drivers created and Bug fixing + Documentation of the work done in weeks 5-7.
End of Month 2 Start with Ethernet shield	

9	Create Drivers for Ethernet shield to set up a chat server and send HTTP requests (single and multiple)
10	Create Drivers for Ethernet shield for webserver and web-clients
11	Rigorous Testing of all the built drivers from weeks 1-10.
12	Finish Final Documentation, Bug Fixing and submit final code with the documentation and examples.

3. What will be showable one month into the project?

One month into the project the drivers for ADC, SPI and I2C buses and EEPROM for Cortex-M0 microcontrollers will be showable and ready to implement.

4. What will be showable two months into the project?

Two months into the project the drivers for RF transceiver, ultrasonic sensor, accelerometer and few more sensors that use ISRs for Cortex-M0 microcontrollers will be showable and ready to implement.

GSoC

1. Have you participated as a student in GSoC before? If so, How many times, which year, which project?

No, This is the first time I am applying to GSoC.

2. Have you applied but were not selected? When?

No

3. Did you apply this year to any other organizations?

No