

Week 5 (3-Feb to 9-Feb) Zac Carico

Goal/Task	% Done	Hours (Act.)
Finish VHDL for PWM	100%	6
Find a Radiation sensor	100%	4
Research into accelerometer	100%	2

Hours on task during the week (On track ≥ 13 / wk)	12
Total hours on task so far this semester (On track ≥ 57 hrs)	51

Progress made during the week (Log)

(What I did)

- Found multiple schematics for creating a geiger counter
- Found an accelerometer to use
 - <https://www.digikey.com/product-detail/en/bosch-sensortec/BMA423/828-1073-1-ND/7401319>
- Finished PWM and made positive and negative signals that can be phase shifted

Difficulties encountered during the week

(What I did not do and why)

- Finding a SOC Geiger counter. While there were many schematics about how to make one, they were all bulky and out of the scope of this project. After discussing it as a group, we decided to change to using an accelerometer instead.
- Making the PWM frequency software configurable. Due to the limitations of an FPGA, it was too complex to make a PWM with a software configurable frequency that could also provide a duty cycle with a 1% resolution. Instead it was designed to run at 1/10,000th of the given clock. This issue may be revisited later in the project when testing the entire system.

Goals for this coming week

(Ones that move the project forward the most)

Goal/Task	Stop Date (Est.)	Hours (Est.)
Import sensors into Altium and create their schematics	2/16	2
Start making some RISC-V cores!	3/1	10
Help team with their parts as needed	N/A	1-2

Estimated time needed to work on goals for this coming week (typ. 13 hrs)	13
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How can we help you achieve your goals?

- We **NEED** to get Libero working on the school computers. When is a good time to do this?
- When are we getting the other Altium licenses?

Week 5 (3-Feb to 9-Feb) Michael Ashford

Goal/Task	% Done	Hours (Act.)
Create baseline RISC-V Processor in VHDL	25%	7
Find a toggle switch	100%	1
Help Zac with PWM Module	100%	1
Research RISC-V design and how to create a program	50%	3

Hours on task during the week (On track ≥ 13 / wk)	12
Total hours on task so far this semester (On track ≥ 57 hrs)	33

Progress made during the week (Log)

(What I did)

- Found a bidirectional momentary toggle switch to use
- Researched more RISC-V design and implementation, started a project with one implementation
- Practiced VHDL

Difficulties encountered during the week

(What I did not do and why)

- Problems with Libero
- My wife is pregnant (I'm very excited, but it's also sucking a LOT of time)

Goals for this coming week

(Ones that move the project forward the most)

Goal/Task	Stop Date (Est.)	Hours (Est.)
Install Libero (again)	2/17/20	3
Create baseline RISV-V processor in TMR	2/17/20	5
Build interface for LCD	2/17/20	3
Make the program for our processor	3/9/20	3

Estimated time needed to work on goals for this coming week (typ. 13 hrs)	14
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How can we help you achieve your goals?

- Not much. I'm going to spend more time in the lab to help keep focused.

Week 5 (3-Feb to 9-Feb) James Thomas

Goal/Task	% Done	Hours (Act.)
Schematic		4
UART / VHDL Research		3
Polarfire Research		2

Hours on task during the week (On track ≥ 13 / wk)	9
Total hours on task so far this semester (On track ≥ 57 hrs)	46

Progress made during the week (Log)

(What I did)

Read up on implementing UART.

Read about Polarfire GPIO pins and different configuration capabilities.

Worked on finishing schematic.

Found correct HPC FMC connector for our board and datasheet showing pinout.

Difficulties encountered during the week

(What I did not do and why)

- Don't know the preferred 50 pin connector for the UARTs so I haven't added the correct one to the schematic

Goals for this coming week

(Ones that move the project forward the most)

Goal/Task	Stop Date (Est.)	Hours (Est.)
Add correct 50 pin connector to Schematic	2/16	1
Implement Full-duplex LVDS UART	3/8	15

Estimated time needed to work on goals for this coming week (typ. 13 hrs)	16
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How can we help you achieve your goals?

- Need to know the correct 50 pin connector to use.

Week 5 (3-Feb to 9-Feb) Max Bakes

Goal/Task	% Done	Hours (Act.)
Finish ADC	45%	5
Work on SPI VHDL	20%	6
Research on SPI	100%	2

Hours on task during the week (On track \geq 13 / wk)	13
Total hours on task so far this semester (On track \geq 57 hrs)	47

Progress made during the week (Log)

(What I did)

- Began working ADC on Altium
- Researched SPI Protocol

Difficulties encountered during the week

(What I did not do and why)

- Found difficulty making it down to work on Altium.

Goals for this coming week

(Ones that move the project forward the most)

Goal/Task	Stop Date (Est.)	Hours (Est.)
Finish adc	2/16	4
Finish SPI	2/17	10

Estimated time needed to work on goals for this coming week (typ. 13 hrs)	13
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How can we help you achieve your goals?

- nothing

Week 5 (3-Feb to 9-Feb) Samuel Bagley

Goal/Task	% Done	Hours (Act.)
Work on implementing I2C in VHDL / continue Learning VHDL	80%	4
Sensors into Altium for PCB	50%	2
Research Pulse Sensor	100%	2

Hours on task during the week (On track \geq 13 / wk)	8
Total hours on task so far this semester (On track \geq 57 hrs)	51

Progress made during the week (Log)

(What I did)

- Worked on VHDL I2C implementation. Tried to run simple tests on a Basys 3, but haven't quite gotten it working yet.
- Imported Pressure sensor library into Altium.
- Decided on which heartrate sensor to use in our design. MAX30102 is an infrared heart-rate monitor and also measures blood oxygen levels. It communicates via I2C so it should be easy to operate along with our other I2C sensors.

Difficulties encountered during the week

(What I did not do and why)

- Had some issues with the Altium version control system when trying to add separate libraries. I think I managed to get it working properly, but it is a little weird.

Goals for this coming week

(Ones that move the project forward the most)

Goal/Task	Stop Date (Est.)	Hours (Est.)
Finish my portion of the schematics	2/16	4
Board Layout	3/1	12

Estimated time needed to work on goals for this coming week (typ. 13 hrs)	16
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How can we help you achieve your goals?

- Meet together as a group to work on the schematics together, preferably with more than one Altium license available.

