Digital ASIC Fabrication:
Project Plan

Team 12
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Project Overview

Problem Statement

- Undergraduate students rarely get the opportunity to create a custom digital ASIC (Application Specific Integrated Circuit) and gain experience with chip fabrication.

Project Goals

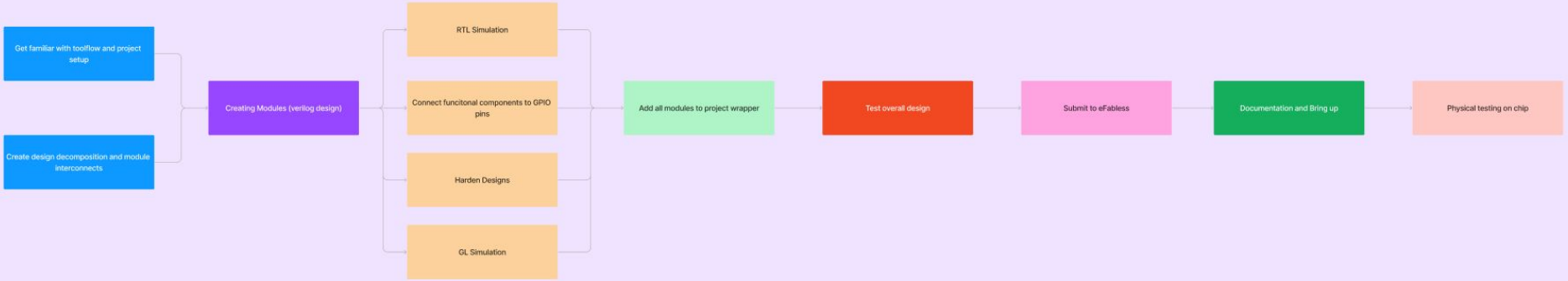
- Our project aims to give interested students experience in chip design and fabrication.
- We plan to build a chip framework that will hold small ASIC projects created by students in a co-curricular team.
- The chip framework will allow the students to have their designs fully implemented and synthesized.

Project Management Style

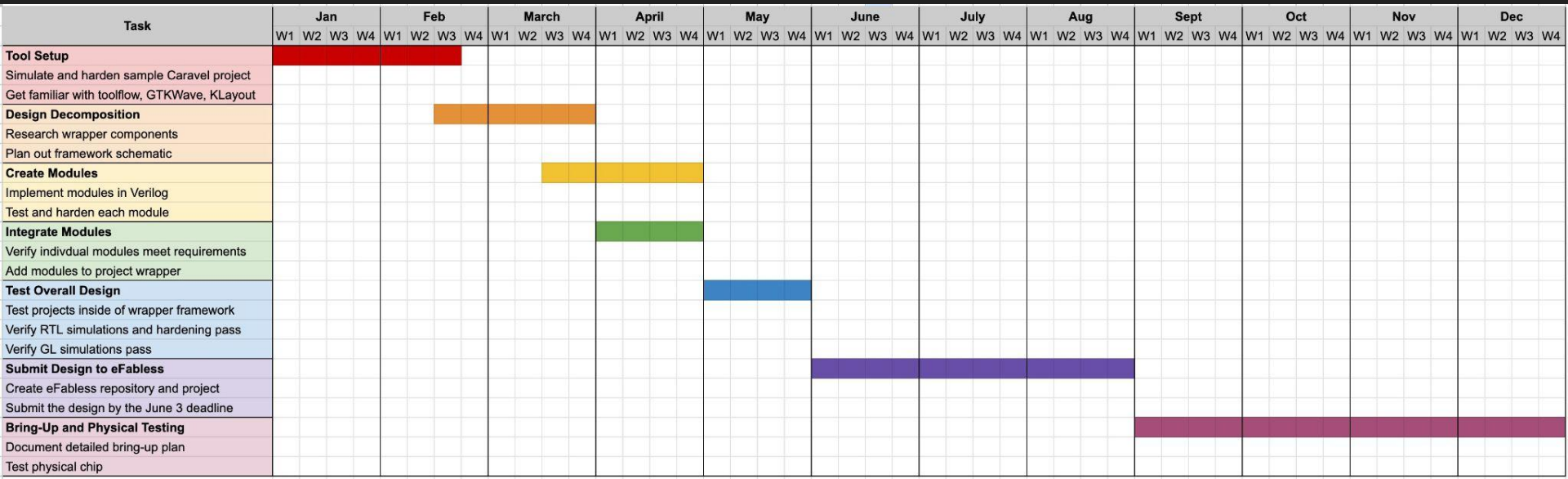
Waterfall Style

- We will be using a waterfall management style. Our project has set goals that are required before we can continue moving forward to the next step. Additionally, We have a set outcome of what our project should look like and how it should function. We do not plan on changing the functionality or scope of our project too much during our development.

Task Decomposition



Milestones


Task
Jan W1 W2 W3 W4
Feb W1 W2 W3 W4
March W1 W2 W3 W4
April W1 W2 W3 W4
May W1 W2 W3 W4
June W1 W2 W3 W4
July W1 W2 W3 W4
Aug W1 W2 W3 W4
Sept W1 W2 W3 W4
Oct W1 W2 W3 W4
Nov W1 W2 W3 W4
Dec W1 W2 W3 W4
Tool Setup
Simulate and harden sample Caravel project
Get familiar with toolflow, GTKWave, KLayout
Design Decomposition
Research wrapper components
Plan out framework schematic
Create Modules
Implement modules in Verilog
Test and harden each module
Integrate Modules
Verify indivdual modules meet requirements
Add modules to project wrapper
Test Overall Design
Test projects inside of wrapper framework
Verify RTL simulations and hardening pass
Verify GL simulations pass
Submit Design to eFabless
Create eFabless repository and project
Submit the design by the June 3 deadline
Bring-Up and Physical Testing
Document detailed bring-up plan
Test physical chip

Risks and Mitigation

Risks

- Not meeting June 3rd deadline
- Physical functionality is not as intended

Mitigation

- Plan each step out in detail to stay on track and meet deadlines
- Thoroughly test each component to give us the greatest chance for success.

Conclusion

We have a set plan and using the waterfall style of project management we should be able to follow our task decomposition to complete each milestone before moving on to the next. By thinking about our risks now we should be able to avoid most setbacks. There will always be problems that arise in the future but by working together now and thinking about these problems we will hopefully avoid most setbacks.