

CprE 492 - sdmay20-08

Cirq: A Python Framework for Creating, Editing, and Invoking Quantum Circuits

Week 5 Report

3/23/2020 - 4/2/2020

AJ Hanus - Researcher, Developer
Andrew Hancock - Researcher, Developer
Austin Garcia - Researcher, Developer
Calista Carey - Researcher, Developer
Jake Shedenhelm - Researcher, Developer
Jordan Cowen - Researcher, Developer

Client: Victory Omele

Faculty Advisor: Akhilesh Tyagi

Weekly Summary:

The last two weeks, we have had many group meetings and partner meetings. We are ready to submit the first pull request which will begin its evaluation very soon. AJ set up a new AWS instance to better support our tests. The original one was too small and crashed whenever we ran too many. The pull request that Victory sent us has been completed and sent in for review. This pull request also went along with the rest of the Standard Gates that had yet to be implemented. For the most part, everyone is done with their work, there are just a few more tests that need to be completed

Past week accomplishments:

- Got tests running and called the quil functions of a gate.
- Finished implementations
- Parser now runs with our code

Pending Issues:

- Awaiting review for our pull requests

Individual Contributions:

Name	Individual Contributions	Hours this week	Hours Cumulative
Calista Carey	Met as a big group quite a few times to combine all of the implemented code together as one. Also, I worked with Jake to get the new issue that Victory sent us out for review. We also added the <code>_quil_</code> function to this gate so that we could use it for our project. This gate	7 (3/23-3/29) 7 (3/29-4/2)	54

	deals with the CPHASE gates that aren't already within the repo. We are preparing to open the Pull Request for our project, and finishing last minute testing.		
Jordan Cowen	Over the last 2 weeks I've continued work on implementing nonstandard gates. I've had virtual conferences with Andrew about our pull requests and also done virtual conferences with our whole group. We made a presentation for peer evaluations and each came up with questions for other peer eval groups. I also made a second pass parser to rename defgates in QUIL output.	6 (3/23-3/29) 5 (3/29-4/2)	42
AJ Hanus	Met multiple times with the group to go over how to combine our code and merged the other two groups' PRs into one "First Implementation." commit. Finished work with the control flow so that we could run circuits through the QuilOutput class. This enabled our team to create tests and test that our code works. Also added the quil functions for the Measure gate. The code now only needs tests to be ready for the first commit to the official repository.	6 (3/13-3/26) 8 (3/27-4/2)	55
Austin Garcia	I met as a group with the rest of the members while we worked on combining all of our implementations. AJ and I also finished the parser and the control flow of the translation. Now all that is needed is to finish testing.	7 (3/13-3/26) 4 (3/27-4/2)	45
Andrew Hancock	I've met with our group several times over google hangouts since moving to online instruction. I've completed the implementation for XXPowGate, YYPowGate and ZZPowGate. I've also merged those changes into our main branch in order to get ready for our pull request that's coming up.	6(3/23-3/29) 7(3/29-4/2)	50
Jacob Shedenhelm	These past weeks we met as a group	6 (3/23-3/29) 7	53.5

	<p>several times over google hangout. This has been an adjustment but it also has allowed us more flexibility with our schedules. We really dug into our pull requests and completed most of the coding for them. We worked with Aj to get our first cirq to quil output and it looked correct. Our next goal is to begin implementing the test cases. Our client, Victory, would like us to have a pull request up within the next week or so. This will allow him/others to perform code reviews and give feedback on our implementation. Thus far, I would say we are on time with our goals.</p>	6 (3/29-4/2) 7	
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Plans for Coming Weeks:

- Calista: Continue testing implementation and updated code based off of reviewers suggestions.
- AJ: Pull in the initial pull requests from the other groups to more thoroughly test my control flow files. Hopefully, the increase of gates with “_quil_” functions will enable me to work out the kinks in my classes.
- Jordan: Write the code for the _quil_ functions in XPowGate, YPowGate, and ZPowGate. Write the code for the _decompose_ functions for XXPowGate, YYPowGate, and ZZPowGate
- Jacob: Begin implementing test cases for my assigned gates. Test the code and run the output against the QVM virtual machine that Andrew set up.
- Andrew: Along with Jordan, write the _quil_ functions for X, Y, and ZPowGate as well solidify changes that will be made to XX, YY, and ZZPowGate.