Nurturing the Next Generation of Open Source Contributors
• Why is open source good for students?

• What problems do students face when trying to contribute to Open Source?

• What can maintainers do to make their projects easier for students?
“There’s a place in tech for everyone.”
Agency
Creativity

I've been trying to become stronger as an artist...
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POCKET FROG!
70,456
CodeDay Alumni

50,024
Underrepresented in CS
Community Colleges?

• Did you know they can give out Bachelors degrees?
• $5k/yr tuition!
• Students are lower-income, service industry jobs, etc
• Recruiters don’t come to community colleges!
Only 45% of students thought they needed to learn outside of class to get an internship.
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did nothing to prepare at all, because they thought coursework and GPA would lead to an internship or job.
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23% did nothing to prepare at all, because they thought coursework and GPA would lead to an internship. GPA was not correlated with success in finding an internship.

Agency
Creativity

I've been trying to become stronger as an artist...
github.com/codeday

- www-corp
- www-event
- www-labs
- discord-bot
- slack-bot
<table>
<thead>
<tr>
<th>File</th>
<th>Action</th>
<th>Date</th>
<th>Age</th>
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</thead>
<tbody>
<tr>
<td>database</td>
<td>Merge</td>
<td>3 years</td>
<td></td>
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<tr>
<td>lib</td>
<td>Merge</td>
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<td>public</td>
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<td>routes</td>
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<td>views</td>
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<td>.DS_Store</td>
<td>Merge</td>
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<td>.bashrc</td>
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<td>.gitignore</td>
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<td>3 years</td>
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<tr>
<td>CODE_OF_CONDUCT.md</td>
<td>Merge</td>
<td>3 years</td>
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<td>CONTRIBUTING.md</td>
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<td>LICENSE</td>
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<tr>
<td>README.md</td>
<td>readme</td>
<td>15 months</td>
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<td>3 years</td>
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<tr>
<td>package-loc.json</td>
<td>Merge</td>
<td>3 years</td>
<td></td>
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<tr>
<td>package.json</td>
<td>Merge</td>
<td>3 years</td>
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<tr>
<td>screenshot.png</td>
<td>Merge</td>
<td>3 years</td>
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</tr>
</tbody>
</table>

### About

Self-hosted website to make managing public MakerBot printers easy

- 3d-printing
- node.js

### Releases

No releases published

### Packages

No packages published

### Languages

- JavaScript: 02.1%
- HTML: 62.0%
- CSS: 17.6%
Projects are asking for help!
<!doctype html>
<html>
<head>
<title>AppCo</title>
</head>
</html>
Why aren’t students already contributing to OSS?
1. "Expert" Fallacy

Many students don’t know how to work independently.
I don’t know what to do...
Break out of the cycle.
I don’t know what to do… but I can learn!
2. Finding Starting Points

Without much context, navigating a codebase is hard.
Simplified Linux kernel diagram in form of a matrix map
3. “Stupid Questions” & Embarrassment

Asking for help is a high barrier to clear.
Mocha - Multiple async calls inside one test leads to timeout error

The problem is, it is always exceeding the 2 seconds timeout. Mocha documentation is telling me to call "done()" at the callback of promise or return the promise. Manually setting the timeout is not an option for me, I don't like it and it an elegant solution.

I cannot use both because it will throw another error. I have multiple async calls in a single test so I don't know where to call done().

```javascript
if ('should return a working presigned upload URL', async () => {
  let objectFromS3;
  // get the presigned url, try if we can upload to S3 using this url
  const uploadUrl = async module.getPresignedUploadUrl();
  // upload a sample file using the uploadUrl
  axios.put(uploadUrl, sampleVideoFile);
  // directly get the object from S3 to check if its really uploaded there
  objectFromS3 = await s3.getObject(s3Params).promise();
  expect(objectFromS3).to.not.be.defined;
  // delete the uploaded object (I can put this inside afterEach)
  await s3.deleteObject(s3Params).promise();
})
```

As you can see I have multiple async calls in a single test so I don't know which promise to return or in which to use done().

node js  mocha integration-testing
Software Development Process

• Identify and define the problem (debugging/etc)
• Online/peer research to find existing solutions
• Experiment, learn by doing
• Evaluate proposed solutions
• Verify problem is solved
• Document solution
How can maintainers help?
1. CONTRIBUTING.md

Resources, coding conventions, styles, CoC, etc
2. Dev environment!

How do you get it running? (For Linux/Mac... & Windows!)
3. CI w/ Linting & Tests

Help students avoid easy pitfalls!
4. ARCHITECTURE.md

How the pieces fit together & information flows through files
5. good-first-issue

Speaking of which...
5a. Self-contained

Solved in one file, minimal tracing around the codebase
5b. Clear

Enough detail that they don’t have to ask for clarification
5c. Decided

Doesn’t require a maintainer discussion to move forward
5d. Recent

It’s not obvious if old issues (~6-12mo+) are still valid
• CONTRIBUTING.md
• Dev environment
• CI w/ Linting & Tests
• ARCHITECTURE.md

• good-first-issue
  • Self-contained
  • Clear
  • Decided
  • Recent
Results
Visualizing Self-Driving Car Sensors

Mehrab H., Shania D., Yen L. / Omar Shehata (Cesium)

Goal: Visualize the point cloud data. Achieved by adding facets such as eye dome lighting to differentiate points and attenuation to change size.

Improvements: Alterations in the toolbar only apply to the current frame. We would make any changes permanent in the future.

Point Cloud Shading
Exporting Movies from Hubble.gl
Raymond W., Elisa M., Kent Z. / Chris Gervang (Uber Elevate)


Working Together to Help Students
- CONTRIBUTING.md
- Dev environment
- CI w/ Linting & Tests
- ARCHITECTURE.md
- good-first-issue
  - Self-contained
  - Clear
  - Decided
  - Recent

We can help!
CodeDay.to/labs-oss
CodeDay.to/labs-oss

CodeDay.to/labs-mentor

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