

**Project 1**  
**Students' Choice of Web Apps**

each milestone's deadline is noon  
see [cs164.net/expectations](http://cs164.net/expectations) for each milestone's expectations

<b>Mon</b>	<b>Tue</b>	<b>Wed</b>	<b>Thu</b>	<b>Fri</b>
<b>2/20</b> Proposal				
	<b>2/28</b> Design Doc, Style Guide			
	<b>3/6</b> Alpha			
				<b>3/23</b> Release

**Help**

Help is available throughout the week at <http://help.cs164.net/>,  
and we'll do our best to respond within 24 hours. But do turn first to your partner with bugs!

## Academic Honesty

All work that you do toward fulfillment of this course's expectations must be the work of you and your partner. Collaboration with anyone other than the partner with whom you begin the semester is not permitted unless one of the course's heads approves a change of partner in writing. Partners must contribute equitably to each milestone: you may not implement most or all of some project's milestone and submit it on behalf of your two-person team.

Viewing or copying another individual's work (even if left by a printer, stored in an executable directory, or otherwise exposed) or lifting material from a book, website, or other source—even in part—and presenting it as your own constitutes academic dishonesty, as does showing or giving your work, even in part, to another student or soliciting the work of another individual. Similarly is dual submission academic dishonesty: you may not submit the same or similar work to this course that you have submitted or will submit to another. Nor may you provide or make available solutions to projects to individuals who take or may take this course in the future. Moreover, submission of any work that you intend to use outside of the course (*e.g.*, for a job) must be approved by the staff.

You may read and comment upon classmates' code toward fulfillment of projects' code reviews but only for classmates whose code is assigned to you by the course's staff for review. You may integrate ideas and techniques that you glean from your reviews of classmates' code and from classmates' reviews of your code into your own work, so long as you attribute those ideas and techniques back to your classmates, as with comments in your own code. As for classmates beyond your own partner and those with whom you're involved in reviews, you may discuss projects, including designs, but you may not share code. In other words, you may communicate with those classmates in English, but you may not communicate in PHP, JavaScript, or Objective-C. If in doubt as to the appropriateness of some discussion, contact the course's heads.

You may turn to the Web for instruction beyond the course's lectures and labs, for references, and for solutions to technical difficulties, but not for outright solutions to projects or portions thereof. However, failure to cite (as with comments) the origin of any code or technique that you do discover outside of the course's lectures and labs (even while respecting these constraints) and then integrate into your own work may be considered academic dishonesty.

All forms of academic dishonesty are dealt with harshly. If the course refers some matter to the Administrative Board and the outcome for some student is *Admonish*, *Probation*, *Requirement to Withdraw*, or *Recommendation to Dismiss*, the course reserves the right to impose local sanctions on top of that outcome for that student that may include, but not be limited to, a failing grade for work submitted or for the course itself.

## Getting Started.

- Start the CS50 Appliance (version 3), and ensure that everything's up-to-date by executing:

```
sudo yum -y update
```

- Next, execute

```
sudo gedit /etc/hosts
```

and add the following line at the bottom of the file that opens, then save and quit `gedit`.<sup>1</sup>

```
127.0.0.1 project1
```

- Okay, for the sake of discussion, we again need to call you or your partner Alice and the other of you Bob. Assume the same identities that you assumed on for Project 0, then read on!**

- Only Alice should perform this step.**

Log into your Bitbucket account and create a new, private repo as follows:

- Select **Repositories > create repository** at top-right.
- Ensure that **Create new repository** is highlighted (in dark blue).
- Input a value of **project1** under **Name**.
- Ensure that **Private** is checked.
- Ensure that **Git** is selected under **Repository type**.
- Check both **Issue tracking** and **Wiki** under **Project management**.
- Select **PHP** under **Language**.
- Input a value for **Description** and/or **Website** if you'd like.
- Click **Create repository**.

You should then find yourself at a page whose URL is `https://bitbucket.org/alice/project1`, where `alice` is your actual Bitbucket username. Click the **Admin** tab at top, then click **Access management** at left. In the text field under **Users (1)**, input your partner's Bitbucket username, then click **Admin** at right. Next, input `cs164` into that same text field, then click **Admin** at right. Finally, input your TF's username (which can be found at `https://www.cs164.net/Staff`), then click **Admin** at right. Your partner and CS164's staff, including your TF, should now have access to your repository. Your partner can confirm as much by visiting `https://bitbucket.org/alice/project1`, where `alice` is your actual Bitbucket username.

---

<sup>1</sup> No need to append `project1.localdomain` to that line.

**Only Alice should perform this step too.**

Assuming you already have a directory called `vhosts` in your (well, John Harvard's) home directory, create a `project1` directory within `vhosts`. Then create an `html` directory within `project1`. Then `chmod` all three, plus your home directory, `711`.

Now create a file called `index.php` inside of `~/vhosts/project1/html/` containing the below:

```
<?= 'hi' ?>
```

Then `chmod` the file `600` (though it should be already) and visit `http://project1/` with Chrome inside the appliance. Be sure to type the `http://`, else you'll end up Googling "project1". You should be greeted with `hi`. If you instead see some error, best to retry these steps!

**And only Alice should perform this step too.**

Execute the following commands to add the beginnings of Project 1 a local repository:

```
cd ~/vhosts/project1/  
git init  
git add --all  
git commit -m "Initial commit"
```

Then execute the below to add a "remote" for your Bitbucket repo, where `alice` is your own Bitbucket username:

```
git remote add origin git@bitbucket.org:alice/project1.git
```

Now push your code to that remote:

```
git push -u origin master
```

If you then visit `https://bitbucket.org/alice/project1`, where `alice` is your actual Bitbucket username, you should see the directories and file you just pushed.

**And now Bob should perform this step.**

Execute the below, where `alice` is Alice's own Bitbucket username, not yours:<sup>2</sup>

```
cd ~/vhosts/  
git clone git@bitbucket.org:alice/project1.git
```

If you now execute

```
ls
```

---

<sup>2</sup> Recall that your **project1** repo technically lives in Alice's Bitbucket account, but you nonetheless have admin privileges for it.

you should see that you have copies of the directories and file that Alice pushed to your shared Bitbucket repo. Proceed to `chmod` things just as Alice did earlier. Then confirm that your own vhost works by visiting `http://project1/` with Chrome inside the appliance. Recall that you can automate `chmod` with a hook, per `cs164.net/hooks`.

### Specification.

- Your challenge for this project is to implement your choice of mobile web apps. So long as your project draws upon this course's lessons, the nature of your project is entirely up to you, albeit subject to the staff's approval. We only require that your app meet some technical requirements.

### Technical Requirements.

- Your app's UI should be designed for a smartphone whose width is defined by `device-width`; its actual resolution might be anywhere from 320×480 to 760×1280.
- Your app must be implemented with HTML5, along with JavaScript and/or PHP 5.3.
- Your app must be developed and/or tested within `/home/jharvard/vhosts/project1/` in version 3 of the CS50 Appliance. You're welcome to develop it in some other environment, so long as it ultimately works if installed in that directory (and `chmod`'d appropriately).
- If you'd like to test your app via the Internet with an actual mobile device, you're welcome to configure a vhost on `cloud.cs50.net`, per `https://manual.cs50.net/vhost`. Visit `https://cloud.cs50.net/` to request a CS50 Cloud account as needed.
- You may use any IDE or text editor you'd like to develop your app, but `nano` and `gedit` are discouraged. Among text editors for Linux, we recommend `vim` and `emacs`. Among text editors for Mac OS, we recommend TextWrangler. Among text editors for Windows, we recommend Notepad++. Among IDEs for all OSes, we recommend NetBeans.
- You are encouraged, but not required, to use a third-party framework (*e.g.*, jQuery Mobile, Sencha Touch, *etc.*) for your app's front-end.
- You are encouraged, but not required, to use a third-party framework (*e.g.*, CodeIgniter, Kohana, Symfony, Yii, Zend, *etc.*) for your app's back-end, if any. A back-end is not required, though; your app may be entirely client-side. **If your app has a back-end, it must adhere to an MVC architecture.**
- You are encouraged, but not required, to use a MySQL or SQLite database.
- Your app may use third-party libraries and plugins (for CSS, JavaScript, and/or PHP) so long as their sources are cited, as with comments.
- Your HTML5 must be well-formed but it need not be considered valid by the W3C's validator (which dislikes browser-specific tags).
- You must use `git` and Bitbucket for version control.
- Under no circumstances should we be able to trigger runtime errors in your PHP or JavaScript code. Be sure that you handle unwanted inputs and HTTP failures elegantly, as by reporting such errors or silently handling. Under no circumstances should your code trigger errors in a browser's viewport or console.