CS 189: Programming Practicum

Syllabus, Spring 2016

Logistics
Course: CS 189: Programming Practicum
Website: https://www.cs.hmc.edu/cs189
Instructor: Chris Stone <stone@cs.hmc.edu>, Olin 1271

Course Overview
In CS 189 you will design two half-term projects that will give you a chance to pursue, in a scheduled, deliberate, reflective, and self-directed way, a software undertaking using a new-to-you technology, library, API, or domain, such as:

- You've always wanted to learn Ruby on Rails or Django or Drupal or (insert web templating framework here)... so, think of a feasibly-sized application, and dive in!
- You want to build a web application from scratch to become more familiar with some or all of the component (raw) technologies: HTML, CSS, JavaScript, SQL, ... . This course would certainly encourage it (see the default option below).
- You'd like to learn how to use the OpenCV computer vision library or the Qt UI library or any other large open-source libraries, perhaps for game-development, that require "some getting used to."
- You have a hardware project that requires programming and would like a structured, scheduled way to approach it.

Of course, there are many other projects CS 189 can support -- these are just some possibilities. The projects must have a demonstrable deliverable, must involve technologies new to you, and should require on the order of 3–5 hours per week, including the write-ups of your progress.

We will not meet as a class on Tuesdays (though we strongly recommend you use this time as a regular work session). You will keep in touch with your instructor (and peers) by submitting regular reports on the CS wiki.

Deliverables:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 26</td>
<td>5pm</td>
<td>Project 1 Plan</td>
</tr>
<tr>
<td>February 9</td>
<td>5pm</td>
<td>Progress report 1</td>
</tr>
<tr>
<td>February 23</td>
<td>5pm</td>
<td>Progress report 2</td>
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<tr>
<td>March 8</td>
<td>5pm</td>
<td>Final report for Project 1 and Project 2 Plan</td>
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<tr>
<td>March 29</td>
<td>5pm</td>
<td>Progress report 3</td>
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<tr>
<td>April 12</td>
<td>5pm</td>
<td>Progress report 4</td>
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<tr>
<td>April 26</td>
<td>5pm</td>
<td>Final report for Project 2</td>
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Contents of a Project Plan

- Describe your project goal for the current half-term. If appropriate, include any context, motivation, or connections this project might make with other projects. Your goal must be a concrete deliverable (usually a web site or a program), making it easy to decide whether or not you achieved this goal.

For example, “Learn how to use the OpenCV library” might be motivation for a project, but it’s not an acceptable goal, because there’s no objective way for us to agree whether you’ve learned OpenCV. In contrast, “Build a program (using OpenCV) that does …” has a very clear success criterion.

- Propose your schedule. Include milestone goals that will correspond to Progress and Final reports. More detail is better here, even if the detail serves to motivate your thinking about your next steps. You should have a very good picture of what you plan to accomplish over the first two weeks. You don't need as many details for subsequent goals but it doesn't hurt to think ahead. In particular, make sure the project scope seems reasonable with 3–5 hours per week.

Contents of a Progress Report

- Describe your progress since the last update (about a paragraph or two). You should note in particular anything particularly interesting you learned, or any obstacles that got in the way and how you dealt with them. These can be small (details of a particular technology or language) or large (something simply ended up not working), and the remedies might be straightforward (enough work worked!), creative (you redefined the bug as a feature), accepting (took another approach altogether) or something else entirely. The big picture is that your path may be one of interest to someone else in the future, and it will help to point out what happened along the way.

- Describe how well your project works currently, and explain in at least a few sentences what comes next.

- Compare your progress against the schedule proposed in your Project Plan.

- Include a link to your project and/or a screenshot or other media that shows it in its current state.

- Be sure to note the time you've spent on the project since the last update.

Contents of a Final Report

- Compare your final results with your initial proposed plan. Reflect on the progress you made and, in particular, if you didn't achieve your original goals, discuss the issues that impeded your progress.

- Provide a link to a video demo of your project (preferred), or extensive photos or screenshots.
Grading

Each project will be scored on a -6 to 6 scale, with -1 to 1 points assigned for
  ● Time spent
  ● Progress consistent with goals
  ● Quality of product
  ● Timeliness of reports
  ● Quality of reports
  ● Innovation

The conversion to letter grades is 5-6=A, 4=A-, 3=B+, ...