

## Lab 5: Software Design

**Due date:** Thursday, April 28.

This is a **team lab**. Each team submits one set of deliverables.

### Lab Overview

During this lab each team will do the following:

- Finalize the database design started in Labs 2 and 3.
- Prepare the software design and the GUI prototypes for the key functionality of the software.

The lab does not have specific stages, however, on **Thursday, April 28**, we will receive a visit from Dr. Chris Kitts. He will spend 10-15 minutes talking to each team in turn. The specific instructions for what each team is expected to achieve during its time with the customer are provided below.

### Software Specification

The main document driving your software specification and prototyping efforts is the **Use cases** document created by the customer. The document provides the list of use cases that the customer wants implemented in the software. The specific details of implementation of these use cases, whenever they go beyond the text of the document are left to individual teams. Some comments on the implementation strategies are given below.

Each team will receive a list of assigned use cases. Most of the use cases are required for all teams to implement, but some, lower priority use cases are assigned to one or two teams. Teams are allowed to present software design for all use cases, but **must** concentrate on the assigned use cases first.

## Software Architecture

As mentioned earlier in the course, the specifics of the intended use of the pyroprint library dictates the need to build the C-PLOP system as a web-based application.

Each team has received a virtual machine (VM) with a standard LAMP (Linux-Apache-MySQL-PHP) stack of software installed on it. This allows each team to build PHP/Javascript-based front end for the C-PLOP system. If your team elects to use different technologies for the web-based front end, please discuss your needs with the instructor ASAP<sup>1</sup>

## Lab Assignment

### System Components

Each team has to prepare the following system components as deliverables.

**The database.** The initial database design you proposed in Lab 3 will be returned to you with the instructor's comments no later than *Tuesday, April 26* (in fact, the Lab 3 submission will be available for pickup on Monday, April 25 at any time I am in my office, 9:00am to 3:00pm). Each team shall prepare the final database design based on the newly available information and the instructor's comments. Instructor's comments, especially if/when they relate to incompleteness or outright incorrectness of the database design, need to be taken into account during the redesign. Discussion of individual teams' Lab 3 designs will occur during Tuesday, April 26 lab session.

**Software Design** Each team shall create a prototype of the front end of the system. The key goal of the prototype is to give the instructor and the customer the idea of how the human-computer interaction outlined in the **Use Cases document** (or implied by it) will be implemented in the system.

Each team can choose how to prototype the front-end of the system for this lab.

**April 28 lab period: meet with the customer.** Dr. Chris Kitts will join us for the lab period on *on Thursday, April 28* to discuss the software design with each group and to answer any questions about other pending issues.

Each team shall have a "final draft"-stage of the UI design ready to demonstrate to the customer. Teams will have about 15-20 mins each to demon-

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<sup>1</sup>My understanding, based on the quick poll we did during last lab is that all teams are planning to use PHP as the server-side language.

strate the prototype and discuss it with Dr. Kitts. Each team shall officially document his comments on the design — in particular, any comments that lead to a change in the design shall be written up and posted to the team’s wiki page.

**Finalizing design.** Each team shall prepare and submit the front-end design specification. The format of the specification is left to each team, but the following should be in the specification:

- For each use case, screenshots/storyboards of the GUI.
- For each use case, team’s notes on the use case.
- For each use case, customer’s comments and team’s reaction (as applicable).

## Submission Instructions

This lab has both hardcopy and electronic deliverables. It is expected that all hardcopy deliverables are also available electronically on the team’s project wiki page (as wiki pages or as attachments).

Submit as hardcopy:

1. Final database design. You can submit the printout of the SQL file containing `CREATE TABLE` statements.
2. Changelog for the final database design.
3. **Original design submissions from Labs 2 and 3.**
4. Software design specification as outlined above.

Please note, that your design specification is a single documents with all screenshots/storyboards embedded in it. You **DO NOT** need to submit any UI code you create in preparation of your design (I will sit down and inspect the UI prototypes of each team on April 28 as well, and will make my comments in parallel to Dr. Kitts).

Submit electronically using `handin`

1. The `DB-setup.sql` file with all `CREATE TABLE` statements for the group’s database.
2. The `DB-drop.sql` file containing `DROP TABLE` statements for each table in your database.

Put all the files into a single zip or gzipped tar archive `lab4.zip` (or `lab4.tar.gz`) and submit using the following command:

handin dekhtyar lab04 lab4.<ext>

**Note on the due date:** The official due date is April 28, Thursday, however, you may submit hardcopies of your documents on Friday, April 29. Note that I must have the hardcopy documents submitted to me before I leave the campus on Friday, April 29. I will be in my office in the morning, will be gone 12-2pm and will be back 2-3pm, which makes Friday, 3:00pm the effective deadline for submitting the hardcopies. If I am not in the office when you bring the documents, place them in the yellow envelope pinned to the corkboard outside my office and send me an email stating that your team has submitted the hardcopies.