ABSTRACT
This document gives an overview of what is required in the final paper.

Tell me about your project. Give a brief (one-paragraph) introduction about the system you delivered (built and showed in class).

Include a sentence or two about your motivation, how you prototyped your system, how you ran heuristic evaluations, how you tested the system, and your final deliverable.

Finally, tie it all together. Tell me about your overarching hypothesis, results, and one a summary of your conclusion.

This is a formal write-up. It is expected that spelling and grammar have been checked, and the document as a whole has been proof-read. The document should have figures with figure numbers that you reference throughout the discussion. Reference the figure in the text before it appears in the body of your document. Describe the image and explain its relevance.

Proper use of footnotes and references is required. We will be grading spelling, grammar, proof-reading, layout, and general professionalism of your paper.

1. INTRODUCTION
In the introduction, describe the background of your project. What is lacking in the world? What needs to be fixed? What was your motivation in creating your system? Discuss the concept of your project: how you designed your system, and, more importantly, what drove your design decisions. Why is your project compelling or significant? Talk about your target users. Who would use the system, and why?

Briefly discuss your design decisions, and how they were influenced by requirements gathering steps (focus groups, competitor analysis, and any other system research that you performed).

2. RELATED WORK
Related work includes products and projects that are similar to yours. For the purpose of this paper, include the competitor analysis here. The competitor analysis provides a critical analysis of the limitations of the current systems or practices (that is, the problems that users experience with the current systems or practices). Discuss the two current systems that do something similar to your proposed system. Then, describe two pros and two cons each system. Especially if the competitor system is the number one selling product in the market, justify why there is room for a competitor (i.e., you) in the market. Provide pictures or screen captures of competitors’ products or current practices with comments. For example, Figures 1 and 2 show competitive systems for vending machines.

3. REQUIREMENTS GATHERING
Here, discuss your focus groups and any other associated research that helped to drive your project.

3.1 Focus Groups
State your research questions – the questions you wished to answer by conducting the focus groups – and discussion points for each focus group. Discuss the focus group in context with other requirements gathering methods (ethnographic observation, interview, contextual analysis) and explain which method was (or would have been) best for your system.

Describe in great detail who the participants were (age, gender, job/study, Internet/computer experiences, experience using similar products, etc.) Do not report any names, please, as this course received IRB exemption with the promise...
Figure 2: Illogical payment method (the slot for bills is separated from the slot for coins.)

Figure 3: The focus group consisted of five users of similar systems. One of the users is not shown.

of not asking for user names. Describe where and when the interviews, discussions, or observations took place. Include any photographs or video stills from your focus group (in this section), and transcripts or guiding questions (in an appendix).

Discuss how the focus group participants influenced the personas of the target users.

In this example, the focus group (Figure 3) was instrumental in identifying the challenges in using a typical soda machine.

3.2 Storyboard and/or State Diagram

Show and discuss the storyboard and state diagram of the system’s user interface. Explain how your proposed system will work. You may use either the storyboard or the state diagram to explain or illustrate your system’s behavior.

Figure 4 shows a storyboard example.1 Discuss the storyboard by explaining the contents of each frame, and explaining the transitions between frames. How does a user navigate your system?

A storyboard is a lot like scenario (from the observations, focus group, or interview) drawn out like a comic strip. Show

1http://wireframesketcher.com/blog/images/20090503/checkout-storyboard-small.png

pictographically how someone would use your system.

3.3 Requirement summary

Discuss here your five functional and five non-functional requirements. The first functional requirement should be a one-sentence summary of your system. For each requirement, indicate whether it is high, medium or low priority. For each, include justification why it is included.

Example functional requirements

Name: Cash and card payments

Priority: High

Description: The system must support cash and card payments for fines.

Justification: Some users will not have enough cash and if the system does not allow users to check out books unless the user pays the fine, than alternative payment method to cash payment must be provided

Example non-functional requirements

Name: Wheel chair access

Description: The system must be accessible by users in a wheel chair.

Priority: High

Justification: To be in compliant with American Disabilities Acts.

4. PROTOTYPING

In this part of your final paper, discuss your prototyping and heuristic evaluation portion of the project.

4.1 Low-Fidelity Interactive Prototype

Discuss the interactive, low-fidelity prototype version of your system. Describe whether it is horizontal or vertical. I need a record of this prototype version of the interface delivered with this report. It can be a screenshot if you made a computer-aided mock-up, photograph if you created a physical version, pencil-and-paper scan if you drew it, and so on. An example2 of a low-fidelity prototype is shown in Figure 5. Note that it is interactive; the user can simulate many of the actions that the final product will afford.

Discuss briefly (one paragraph) how you made the prototype and a summary of the group’s reactions to the prototype. Summarize the most interesting (to you) usability issues you discovered, and the changes you made for the high-fidelity prototype. Include the in-depth critiques from this milestone deliverable in an appendix (see Appendix ??).

Example

The low-fidelity prototype was created with paper cut-outs of each window, and yellow-colored clear plastic cutouts to simulate mouse-over highlighting. To interact with the prototype, the user pointed her finger and touched the paper cutout to simulate clicking. Then, one of the group members would place the appropriate window on top of the main window. When mouse-over was needed, the group members
Figure 4: An example storyboard for a checkout process in online shopping. The user selects “Checkout” from the shopping cart screen (1), enters login information (2), fills in an address (3), enters payment information (4), and, finally, is shown the thank-you screen (5).

Figure 5: An example of a low-fidelity prototype of a certain system would place the yellow plastic overlay on top of the appropriate element.

4.2 Heuristic Evaluation Summary

In this section, please provide a summary of your heuristic evaluation. What methods or heuristics did you choose, and why? What were the major problems each group member found? What were the major successful points? Cite your sources.

4.3 High-Fidelity Interactive Prototype

Discuss your interactive, high-fidelity prototype version of your system. Describe whether it is horizontal or vertical.

http://portfolio.splendidnoise.com/images/portfolio_usability.jpg

In this section, include a screenshot or photograph of your prototype, and tell me a bit about it. How does it work? If it is a complicated prototype, please label the pieces and tell me what they do.

For software-based projects, please upload the prototype (if it’s a stand-alone file like Flash or Java), or provide the URL. You do not have to share the source code.

Discuss briefly (one paragraph) which features you decided to include in this prototype and why they were important.

4.4 Final Product

After studying and evaluating the high-fidelity prototype, explain any changes made to the prototype for the final version. If you did not change your system as a result of the heuristic or other evaluations, discuss why not. Describe your final product. Tell me how it works. Include photographs or screenshots as appropriate, including photographs of someone (e.g., you) using your system. If it is overly complicated, you may need to show a few pictures and label the components. Note any changes you made as a result of user testing. For each major problem the users found, discuss why or why not you chose to address this problem.

For software projects, you will be required to upload a compiled binary (e.g., Flash, Java) or include a URL to the Website of your project. You do not have to submit any source code.

5. SYSTEM EVALUATION

In this section, discuss the user testing setup for your system. Test your revised prototype with a set of users. Your user tests must have at least ten (10) users. You may reuse
the same users you recruited earlier for the focus groups, but you don't have to. You are free to choose any testing method covered in class. Please beware, however, that some methods are not stand-alone methods. For example, remote testing has to be used with another method.

Report your experiment, discussing each of the subsections below.

5.1 Deviation from user testing plan

Describe how your actual user tests deviated from the user testing plan deliverable.

Example
The user evaluation did not deviate from the user testing plan.

Example
The user evaluation deviated from the user testing plan in the following ways.

• Rather than using think-aloud protocol, we chose to use question-asking protocol because our pilot tests indicated the users needed more prompts while interacting with our system.

• The lab setup was modified because of monitor glare from the window.

• We chose not to use the man-eating sharks as negative reinforcement as per IRB/ORCA policy against harming humans.

5.2 Objective(s)

An itemized or enumerated list of objectives is sufficient. Objectives of the study should be broken up into specific questions that the study has been designed to answer.

5.3 Stimuli

Include a description of the stimulus or stimuli, including the version or model numbers, where appropriate. If your stimulus is online, provide a URL.

5.4 Participants

Describe your participants, with an indication of strict requirements and allowable variances. How many do you need? Where will you recruit them? Think about ages, genders, ethnic background, experience with technology, major in college, etc.

Discuss the details of the users on which you will perform user testing. How many subjects did you recruit? Include their age, gender, experience with similar systems, domain expertise, and any other relevant information. This is not a persona analysis – you are describing the users as a group. Do not include names.

5.5 Procedure

What is the methodology you will use in your user testing? Consider the different testing protocols and methods studied in class, such as performance measurement, think-aloud protocol, teaching method, coaching method, remote testing, etc. Will your study be a within or between groups design? Do you have a control group and an experiment group?

If the users have to perform specific tasks, list or enumerate them here.

Why did you choose this particular method of user testing? Why is it appropriate for your particular system? Justify your choice of method. Compare and contrast this method's strengths and weaknesses with one other testing method, noting pros and cons.

5.6 Evaluation measures

How will you collect data? For example, will you be timing the participants as they complete specific tasks, watching their facial expressions, or collecting data by survey? Or all of the above?

5.7 Lab setup

What kind of equipment will you need? For example, what size of TV or computer screen, computer operating system, type of camera (still vs video), computer accessories, and so on. If you plan to take software measurements, consider the programs that you will need to install prior to beginning the experiment. Include a diagram of the lab with appropriate parts labeled. Denote how the stimuli should be arranged, where the moderator and participant should be, and the placement of any special equipment (e.g., video camera, one-way mirror, etc.).

Discuss, in one or two sentences, each point.

• Where, when, how did you run the experiment?

• What tasks did you have the users complete?

• What questions did you ask?

• What variables were there? Which were control variables, and which were dependent variables?

• How did you ensure that there was no nuisance that affected your data?

• Any other relevant questions. Please break out leading questions into an appendix, but reference the appendix here.

5.8 Hypotheses or Research Questions

In the hypothesis subsection, discuss how you think your final system will perform with the users. Include a null hypothesis, if appropriate.

• H2 The system will be rated as more preferable than a typical website access by 80% of the users.

• H2.0 The system will not be preferred over a typical website access.

• H1 The system will result in access times of under 10 seconds.

• H1.0 The system will continue to result in access times of greater than 10 seconds.

Justify any numbers you came up with. Why 80% of the users? Why 10 seconds?³

Research questions are more general. For example:

³Maybe it is because it took you, an expert user, 5 seconds to perform the task, and you think that doubling it for an average user is sufficient.
• RQ1 How does the blowtorch feedback system affect user experience with web browsing?

• RQ2 What kinds of emotions are elicited using the blowtorch feedback system?

5.9 Data
This section includes tables, charts, and graphs of actual user measurements, and quotes from their interviews.

6. RESULTS AND DISCUSSION
Interpret the data for me. Discuss what each significant measurement from the Data section means. Tell me what the interview data means.

For example, we could say that because users in Group A performed twice as fast as Group B, we infer that the system used in Group A (System A) is more user-friendly. Moreover, qualitative data shows that System A was preferred more often than System B, because descriptive words such as “excellent,” “great,” and “fun” were used for System A and such positive adjectives were not used for System B.

How does your system perform compared to similar products, such as the ones you mentioned in your competitor analysis, in terms of HCI aspects? You may pick which aspects to compare, it can vary wildly from usability criteria, design principles by whoever—Dix [1], software engineering, etc.

For each problem that users reported, answer the following.

• Explain the problem (figures are helpful).

• Argue (one or two sentences) why or why not this is a real problem in your system.

7. CONCLUSION
Whew! You’ve made your project. You’ve tested your project. Tell me about your experience and any conclusions you’ve drawn about it, in terms of HCI.

In particular, rephrase your introduction, the part about what your system does and who it’s for, to include the hypothesis. Did your user tests support or refute your hypothesis? Summarize your results in plain-person speak. Extrapolate to a broad-reaching statement about your system or systems similar to yours and how they affect your target audience.

8. FUTURE WORK
This is where you describe possible extensions, or future work, if you would have had time and the expertise required. Justify why those extensions are good (in terms of HCI aspects). Mention the problems that users found, and how you would address them given more time and resources.

9. REFERENCES