COMPSCI 345 / SOFTENG 350
Human-Computer Interaction

Assignment 3: Realizing a Design
- Worth 8% of your final grade
- This assignment is due Sunday 24th May 11:59pm
- This assignment must be done **individually**

Aims

The aim of this project is to give you experience in designing and implementing a graphical user interface. As this is a third year course, this project is intentionally not 100% specified (just the way things will usually come in the 'real world'). You need to use your common sense, do some research and make some decisions; you can add a list of assumptions and explanations as a part of your hand in.

Background

This assignment builds on assignment 2. Now your task is to further develop the design as an HTML-based prototype.

Note that the competition is a sorting week plus **10** main weeks of the season. In general you should not have to refer to dates or use a general calendar function in your prototype. Remember that play is meant to mostly happen on Saturdays (with possible overflow to Sunday), so it suffices to refer to weeks by number, such as "Week 5". If, however, you want to put specific dates on things, consider Sorting to be done on Saturday June 13th and the main season to be from Saturday June 27th to Saturday August 29th.

Note that you are *not* bound to your Assignment 2 work as a specification; that is:

- You do *not* have to match the lo-fi designs your group did, but you may if you wish
- You do *not* have to implement any or all or the features in your Assignment 2 design, but you may implement some of them if you wish

Details

Choose one type of end user (player or organiser) and one context of use (e.g. player seeks teammates prior to start of season). Design, implement and usability test your prototype with respect to that user in that one context of use. Create and submit deliverables for the following three tasks.

Task One: Design Documentation

(a) Hierarchical Task Analysis (HTA): create an HTA diagram for the task your prototype will support. The top-level node should be a concise description of the task, with the first word being the type of user (e.g. "Organiser groups teams to divisions"); in the sub-tasks omit the type of user and start each label with a verb.

The labels on the HTA diagram itself should be independent of the way the interaction is implemented. For example, you might say 'Select', but not 'Click on'; and you should *not* refer to parts of the screen (so don't say 'from the green rectangle at the top of the screen'). You may, however, include up to 150 words of footnotes to the diagram to explain interaction elements where you think it will help the marker to understand the

prototype (so, in the footnotes you can say "The selected team is dragged to an oval at the bottom of the screen to assign a match location").

(b) Colour scheme: Describe the basic type of your site's colour scheme (e.g. monochrome). Provide a brief rationale for your overall colour choices (no more than 100 words). Show the colours in your scheme; you may do this using a screen capture from https://color.adobe.com or the 'TABLES/EXPORT' screen of http://paletton.com/. Briefly describe the role of two to four of the individual colours (e.g. RGG 194–231–154, low saturation green: background for black main-body text).

(c) Lines, borders and backgrounds scheme: Describe and provide a rationale regarding choices of lines and borders, backgrounds, use of white space and any other methods for grouping, segmenting or giving a particular graphical 'feel' to the site. You do not need to illustrate the components – presumably the prototype does this, but you should provide a brief overall description and rationale (no more than 100 words) and identify two to four specific elements of your strategy (e.g. "Rounded rectangles in low saturation green provide the background for captions of drag-and-drop targets").

(d) Font scheme: Describe each font used on the site and its role; with this description give a brief rationale (i.e. just a few words of explanation of why you made that choice) for each font used.

(e) Assumptions and limitations: This includes explaining the limitations of the design – what you focused on as compared to what you left out in the interests of time, as well as any assumptions about the user's goals or anything else might help the marker to appreciate the quality of the design and its implementation.

(f) Resources used: List all external resources used for Task Two as a bulleted list or table including the source and description of the role it plays in your design.

Report all this as a page called **'Documentation'** on your site – this page does *not* have to follow the site style.

Task Two: Implementation Tasks

Implement the design described in Task One using standardised Web browser technologies of HTML5, CSS and Javascript only; do *not* use applets, Flash or Silverlight and do not use a database management system (MySQL, Access, etc.). Where differences in browser behaviour may be important, use the version of Google Chrome installed in the computer labs as your reference. The site should include:

- Home page: the page from which the user starts the task described by your HTA diagram
- Zero or more other pages of your choice as necessary for the sub-tasks of the HTA diagram (it can all happen on the home page if that works for your design)
- Documentation page (from Task One)
- Usability Test report including linked highlights video (from Task Three)

Include links to the Documentation and Usability Test pages from the top right of your Home page.

There are, of course, many productivity frameworks to accelerate Web development. For this assignment you are to directly author the HTML documents, e.g. using Notepad++. You may

copy in materials produced by other means, or even clipped from websites that you find by browsing – but in each case include an entry in part (f) of Task One ('Resources used'). As examples of the expectations of what is, and isn't, allowable for this assignment:

- You *can* use jQuery if you find it helpful.
- You *cannot* submit a .NET (e.g. MVC) project as your solution. You *can* create a .NET application to help you think about some relevant functions and layout and get ideas about how things work. You *can* clip CSS from a .NET project if you wish (indicate the role this has in your prototype as part of your documentation). Do *not* emulate the subdirectory structure of a .NET (e.g. MVC) project in your submission. You will *not* be able to use methods specific to a framework that are not part of HTML5, CSS or Javascript (e.g. you cannot use Razor syntax).
- Similarly you *cannot* submit a project created by Bootstrap or any other package that produces the website on a design template provided with the package. As with .NET, you may create such a site to get ideas. You *can* clip CSS or other content from a Bootstrap site that you create, but you may find that the dependencies in such projects make that more trouble than it's worth – indicate the role of any copied segments in your documentation.
- You *can* copy code (e.g. a Javascript function or snippet of CSS) from existing Web sites – credit the source in part (f) of Task One. If you were producing a commercial product, this might land you in trouble, but it's acceptable for purposes of this assignment if you find it helpful. You can also use other sites for inspiration – e.g. in terms of colour or font scheme. However, do *not* copy multiple elements of a single site (e.g. do not copy their colour scheme *and* their drag-and-drop Javascript), and don't borrow style elements from topically relevant sites (i.e. your site should not turn out looking like another site that does much the same thing for netball). Indicate the URL of the site in your documentation, and explain what was borrowed and what role it serves in your prototype.
- You *can* use images and other files or snippets from libraries of free web resources such as http://subtlepatterns.com/ for backgrounds or http://www.flaticon.com/ for icons. Note that each site may have additional requirements for how to credit what you take from it, although citing in part (f) of Task One is a good start since it's linked to the site.

If you have a question about whether something is allowed, contact the tutor or the lecturer. Keep in mind the mark scheme (see end of this assignment sheet) and that the emphasis is on *design*. The prototype is meant to illustrate the quality of the design – the prototype with the most functionality, or even the cleverest programming, will not necessarily get the best mark.

Task Three: Quick Usability Check

Get one of your classmates to test your site by attempting to perform its major function. If necessary, use the Piazza forum to find a buddy (you can also have a family member or friend do this, if you wish, but please do your part to be available to at least one other fellow student to test their prototype). Record their session with Morae. Correct any usability issues you find (as well as possible in the time available) and repeat the test.

Cut the video in Morae manager to **30 seconds** of highlights (AVI format – please make the file as small as possible, sacrifice quality for size). Ideally your video should have audio of the user speaking and possibly voice-over from you for each segment indicating what they are doing and pointing out errors. If you weren't able to get good audio on the user, or just for better clarity, you might also overlay text captions to the video. If you're not able to get clear audio *or* do text overlays, include a tabular log of the test highlighting key points (e.g. "17s: user has incorrect expectation of drag-and-drop result").

Briefly report on the findings and corrections (or enhancement) as a result of your usability test (1-2 paragraphs).
  - Add your usability report with access to the highlights video as a page to your website. This page does not have to follow the style of your prototype.

Suggestion: Draw on your personas and scenarios from Assignment 2 if they are relevant. Ask the 'user' to perform the task you specified in your HTA diagram. In addition to the direct observation of their attempt on the task, 'debrief' for a couple minutes afterward to reflect together on what the user found non-intuitive and what could be better about the interaction.

Overall Considerations

In general you should work through the tasks in order – i.e. design (Task One, parts (a) to (d)) before programming a prototype (Task Two), before user testing (Task Three). Normally a wireframe would be a critical step early in this phase of design; however, since you did a paper prototype, you may be able to skip this. If your design differs considerably from the Assignment 2 paper prototype, however, it's a very good idea to do some wireframes by hand, in PowerPoint or using a tool like Balsamiq, before attempting the more detailed decisions like colours and borders, nonetheless the HTML prototype. At any rate, you're not asked to hand in the wireframes.

As you manage your time to complete this project, keep in mind to allow time for Task Three – this will mean cutting your programming time shorter than you might like (the 'real world' tends to make that happen, too!) There will be some iteration. For example, you might change your mind about aspects of the colour scheme as you do your backgrounds and borders design. Also, you may need to update your Task One specification somewhat, particularly the assumptions list (part (e)), after you get near the end of your programming and in response to user testing. Overall, however, the workflow should be from Task One, to Task Two to Task Three.

Keep the following in mind as you work on your prototype:
  - Include enough problem domain data to illustrate your approach, but no more. So, if you want to model that potential teammates are having an online discussion, you should show a few messages of realistic length and tone. Where you think some content would need to scroll in the real case, including enough instances to make it scroll.
  - This is a prototype and you're not using a database: hardcode the system to the data representing the starting point in the scenario you want it to illustrate. Use DHTML techniques to update that in response to the user actions that are implemented on your system. Don't necessarily try to implement everything that could possibly happen. Stick to the flow illustrated in your HTA diagram; and document limitations in Task One part (e). Consider use of tooltips to let the user know if a feature isn't implemented or gives a limited hard-coded result.
  - Do *not* include any of the following:
    o Video (except for your usability test highlights video)
    o User authentication (assume the user has already logged into the site and don't bother to show a log-off button – often these things are handled by the final implementation framework)
    o Splash screens, or navigation from any higher-level site or to other functions – the 'home page' of the prototype is the screen where the user starts the task described by your HTA diagram
    o Ads or online purchases – maybe the financial model would require these, but just design the core interface for getting the task done.

Submission

Before you submit CHECK THAT ALL YOUR LINKS ARE RELATIVE so that the markers can unzip your folder and everything will work. The simplest and most reliable package will be one where all the files go into a single directory.

Submit a zip file (and use ZIP format, not RAR or other) that contains the following via the online Dropbox by Sunday 24th May 11:59pm:

- Your Web site including: Home page and any other pages that the user navigates to depending on your design
- Any supporting files that are needed for the site to be run by the marker. Include all HTML files and style sheet file(s) (unless you did all styles internal or inline)
- Design documentation as a page on the site and any supporting files (e.g. images) that it references
- Usability tests documentation, including short report and video (AVI), as a page on the site
- Please name your submission file using your UPI (e.g., bpli001.zip).

You can make as many submissions as you like, only your last submission will be marked. **You should plan to spend no more than 30 hours on this assignment.**

Marking Guide

Markers will assess your deliverables out of **20 marks** as follows:

Design components		8 marks
HTA	Understandable, complete to appropriate level of detail, matches to prototype	3
Colour scheme	Has an overall explanation and role for 2-4 elements, and supports attractive prototype with good contrast	2
Lines, borders and background scheme	Has 2-4 specific elements, and supports clear visual grouping in the prototype	2
Font scheme	Two or more choices with distinct roles and providing good readability	1
Implementation components		**8 marks**
Effectiveness	Provides a pathway to accomplish the task as per HTA	2
Visual aesthetics	Overall impression, consistency and coherence	2
Dynamics	Provides appropriate interaction, including feedback	2
Depth	Takes on a substantial interaction task	2
Usability test components		**4 marks**
Usability report	Reports errors found and corrected (or at least opportunities for enhancement)	2
Highlights video	Easy to follow, illustrative	2