CSE5ICE 2016
(Internet Client Engineering)
ASSIGNMENT 1 (20%) & 2 (10%)

DUE DATES:

(a) Assignment 1 WEEK 12 Wednesday, 25/5/2016 AT 10.00AM
(b) Assignment 2 WEEK 13 Wednesday, 1/6/2016 AT 10.00AM

OBJECTIVES

The purpose of the assignments are to demonstrate an understanding of the following tasks:

- Applying good web interface design principles and techniques during these processes: design, implementation and evaluation
- Applying the knowledge of client side programming using HTML, DHTML, CSS and JavaScript to build the prototype - you are expected to use these technologies appropriately. It is also expected that a connection to MySQL database using PHP scripting is used to demonstrate dynamic interactions and data presentation.
- Performing a suite of heuristics analysis on the newly designed system to ascertain its effectiveness.
- Because this is a group assignment, it is also expected that students will experience team work and team problem solving skills from this assignment.

GROUP ASSIGNMENT ASSESSMENT POLICY

This assignment contributes to 30% of the assessment for this subject. Groups of **two** or **three** (three is highly recommended) are required to successfully complete this assignment. The outcome of the assignment should adequately reflect the work of such a team, in terms of size, depth, analysis and design. Each member within a group is expected to equally contribute to the final outcome of the assignment; where there is deviation from this, a statement of effort must be provided and signed by all group members. Note that it is expected that the same group will work on both assignments.

ACADEMIC MISCONDUCT

The Department of Computer Science and Information Technology treats any sort of academic misconduct including plagiarism very seriously and when detected, penalties will be strictly imposed. All source code could be electronically checked.

Students are referred to the document on 'Academic Misconduct' distributed in the first lecture and attached to the syllabus. This document can be found from the subject web site in the subject guide.

SUBMISSION GUIDELINES

The hard copy part of the assignment must be submitted by placing it in the relevant boxes on the first floor of Beth Gleeson Building. The soft copy must be submitted via LMS. *Both the hard and the soft copy must be submitted* by the dateline above. [Generally, the department is unable to provide submission dateline extensions unless there is a documented medical/similar reason.]

SUBMISSION CHECK LIST

Assignment 1: Desktop/Laptop Version

Hard Copy:

- *Report 1*: The static and dynamic design of the new system, including screen shots and WNAM diagrams.
- *Report 2:* Heuristic Usability Testing Report
- *Statement of Effort:* a form must be properly filled out and signed by all members.
- *Plagiarism Form:* The *Plagiarism* from must be signed by all the group members.

Soft Copy:

All of the source code including HTML files, scripting files, images, database files (if any) of the *LetsConnect* Website. All of the above files must be zipped in one file with the following naming convention (NO Exceptions): *Group_XX.zip*, where the XX is the assigned ID of your group.

Assignment 2: Mobile/Smartphone/Small-Tablet Version

Hard Copy:

- *Report 1*: The static and dynamic design of the mobile version of the system, including screen shots or paper sketches - explaining differences from the laptop/desktop version and design rationale.
- *Report 2:* Heuristic Usability Testing Report, highlighting mobile Web specific issues only.
- *Statement of Effort:* a form must be properly filled out and signed by all members.
- *Plagiarism Form:* The *Plagiarism* from must be signed by all the group members.

Soft Copy:

All of the source code including HTML files, scripting files, images, database files (if any) of the *LetsConnect* Website. All of the above files must be zipped in one file with the following naming convention (NO Exceptions): *Group_XX-mobile.zip*, where the XX is the assigned ID of your group.

DEPLOYMENT

You are free to develop your assignment on any hardware or software platform or on your own individual UNIX account (if this is easier); however, your program must execute and run on the latcs6 system on your assigned group account (i.e. *http://homepage.cs.latrobe.edu.au/16iceXX/* where *XX* is the assigned ID of your group). Watch out on LMS for instructions on access to these assignment group accounts.

EXECUTION TEST for ASSIGNMENT 1 (no need for ASSIGNMENT 2), likely in WEEK 13

In addition to the hard and soft copy submissions above, an execution test for each group will be organized; each member of the group must demonstrate their section of the assignment. There will be a need to sign up to specific slots to do the execution test – check the announcements to come. **All members of the group must be present at the execution test.**

RETURN OF ASSIGNMENTS

It is anticipated that assignments will be marked and returned within three weeks of the submission date.

ASSIGNMENT 1 (20%)
The *LetsConnect* Website:
a Tool for Connecting People during Difficult Times

The following is the sort of information a client might tell you. Pick it apart and work out what exactly is required, clarify what is wanted (i.e., required functionalities) and ask questions so you can design the best web site for your client's needs.

1. Problem Scenario

The recent years have seen tremendous activity and excitement over community based Web sites, where users contribute content for other users. "Web 2.0" is a term used to describe a recent generation of Web sites where the users are the contributors, participation of users creates the content and a sense of community, and content sharing and self-publishing are encouraged. Wikipedia, Youtube, Facebook are key examples of Web 2.0 sites providing a platform, in short, for end-user participation. In fact, discussion groups, mailing lists, online virtual communities and online noticeboards are older examples of such user-driven Websites.

Notable is Facebook (www.facebook.com), which in the last few years, has grown to more than 800 million users world-wide, certainly a phenomenal growth, making the creator effectively a billionaire. Such Websites have enabled friends and families to stay in touch, not only for next door neighbours but even when geographically separated.

At the same time, there have been times of crisis, with natural disasters such as earthquakes and floods happening with seemingly increased frequencies locally and in different parts of the world, from New Zealand, Japan, Pakistan, to Haiti.

The primary function of the *LetsConnect* Website is a tool to help people connect during times of crisis, such as natural disasters. During such times, we wish to connect people who need specific help with people who can and want to give that specific help, that is, to connect donors to those in need, perhaps just to connect people to members of aid organizations. A Website is one such possible mediator to help people get connected. However, such a site itself cannot survive without some financial support – so, the site allows businesses to advertise on their site to provide a revenue stream.

2. Aim of this Tool

Say, I have toys and clothing that I think could be of use to someone, I could go through an existing aid organization or I could (in the eBay or Trading Post-style) try to connect directly with people-in-need by advertising what I have available to give via the *LetsConnect* Website.

Also, by browsing such a site, I could also gain a better idea of specific needs of people – conversely, the Website could be a means by which affected people can express (or post information

about) their needs (and perhaps wishes). I could make my items available for free (or at low cost) or choose from a list of people who have expressed interest in the items that I want to donate. I could also make my items available for a very low price instead of being completely free. (However, the *LetsConnect* Website is not an auction site and people do not buy or sell via the site; the Website simply aims to connect donors with those in need and buyers with sellers.)

If I was someone looking for toys for my children, I might log on to the *LetsConnect* Website, and look for suitable items and their respective donors. If I find some, I might try to connect with them. If not, I might place my wish-list and request with the *LetsConnect* Website, and hope just the right generous donor might log in and see my request. Instead of looking for something for my children, I might just be looking for spare cooking utensils, or some clothing, or a fridge.

Instead of looking for things, I might be looking for a friend of mine that has been separated from me for a while – I am hoping that my friend is safe, though direct contact has not been possible via the cellphone. While looking over a list of people looking for other people, I might have information about someone I have met, and could help the seeker. In fact, in the light of the recent earthquake in Japan, Google has set up a person finder service for this purpose: http://google.org/personfinder/global/home.html. Alternatively, I may be looking for someone who has shared a similar loss as I have, or I am looking for someone looking to give in a similar manner (e.g., other musicians looking to form a fundraiser concert, builders looking for fellow builders who might rebuild for free, or other chefs wanting to cook a fundraiser dinner). So, it is not just things to donate but also skills to give and experiences to share. However, we will restrict this assignment to donation and seeking of items, instead of seeking people.

Therefore, the main aim of this tool is to help people connect givers and receivers, especially in times of crisis. The *LetsConnect* Website (or tool) is being created for a company called *LetsConnect Pty Ltd*. *LetsConnect Pty Ltd* reserves the right to have advertisements on their site, and to receive revenue for allowing companies to add advertisements. When designing such a *LetsConnect* Website or tool, the designer has to see the problem mainly from the point of view of different types of potential users.

3. Required Functionalities

The Web based tool is envisioned to be used by users (clients) and the *LetsConnect Pty Ltd*'s **administrator**. There are a number of main tasks for users to do through the Website and **two** main categories of users are **client,** and **administrator**:

a. **client**: can perform four main tasks as follows:

- *look for an item*: the user looking for items donated by others/wishlist creator,
- *donate an item*: the user is someone with some item(s) to donate,

b. **administrator**: the administrator of the Website *LetsConnect* who can:

- *manage the site*, that is, s/he can delete and edit (acting as moderator) client entries if required,
- *modify presentation,* be able to change two obvious aspects of the presentation of the website (e.g., the background colour on all the pages and the navigation bar colour), and
- *put up ads* as required.

In particular, we may have:

Item Donor: "I have toys and clothing that I think could be of use to someone, I could go through an existing aid organization or I could (in the eBay or Trading Post-style) try to connect directly with people-in-need by advertising what I have available to give via the LetsConnect Website.

Also, by browsing such a site, I could also gain a better idea of specific needs of people. I could also make my items available for a very low price instead of being completely free."

Item Seeker: "I am looking for toys for my children; so, I might log on to the LetsConnect Website, and look for suitable items and their respective donors. If I find some, I might try to connect with them. If not, I might place my wish-list and request with the LetsConnect Website, and hope just the right generous donor might log in and see my request. Instead of looking for something for my children, I might just be looking for spare cooking utensils, or some clothing, or a fridge. "

(You are free to further subcategorise or consider further categories of users/tasks but the tool should at least support the above categories of users/tasks.) Note that the same person can be both an item donor and an item seeker at the same time.

(Note that the system need not automatically try to match item seekers and item donors – the tool is merely for people to leave information for others, and to seek information that might be available via basic browsing.)

A *reputation system* for users will also be required in order to provide a means of "trust" in an environment where strangers are interacting with strangers. Part of the success of Uber (http://www.uber.com), ebay (http://www.ebay.com), booking (http://www.booking.com) and Airbnb (http://www.airbnb.com) is due to a reputation system that provides some kind of opinions or ratings on participants. Include also a feature for a participant to provide opinions on other participants.

More details on the tasks the users need to be able to perform via the Website are given below.

Clients will need to perform the following tasks (CT1 to CT4) through the Web site:
(CT1) register as a client of *LetsConnect*, ~~as any subcategory user,~~ providing basic user profile information such as name, nickname on Website, address and contact details (note: a client typically registers with a username and password, etc, and normally a system would check that the username given by the client does not already exist, but in this assignment, you do not need to do that),

(CT2) should be able post information to the site after logging in (please also provide a *log out* button using `session_destroy()` in PHP etc) and browse information, i.e., to

- **when needing something:** browse list(s) of existing items available for donation by others, and be able to request those items (i.e., request an item that has been listed by someone, this request should be noted in the database that someone has registered interest in the item; it can still be displayed but should be marked as such),
- **when needing something**: fill in a form to provide information about item(s) being sought if needing some item (i.e., add to the list of desired/wished items) - this is done presumably after having found that no existing item would match the need,
- **when having something to donate**: put up a description of an item, if having an item available, if having something to donate,
- **when having something to donate:** browse list of desire/wished items and respond to a request for an item (i.e., respond to someone's desire/wish for an item)
- **when having something to donate:** when someone has expressed interest in the item, you should be able to accept the request which then removes the item from the list of available items; if not yet accepted, the item should still appear in the list of available items but marked as having one or more persons expressed interest in it or requested it,

- **when wanting to provide comments on another user**: find a user and provide comments on the user and be able to provide a rating from 1 (worst) to 5 (best) for for that user (and be able to display an average (over all ratings obtained for each user) and the number of ratings) - for simplicity, in this assignment, we will just use a simple one rating for all aspects though in practice (there might be ratings for different aspects, e.g. timeliness of delivery of donating, etc); note that normally one could only leave opinions for another person whom one has done a transaction with, but for the purposes of the assignment, to simplify, anyone can leave an opinion for anyone, but the opinions and ratings should be recorded in the database on the server-side.

[Design the system to allow reading/browsing of information without needing to log in, but a client needs to log in in order to write/edit/post information up.]

(CT3) allow the client to log in and then see/update information they provided or remove requests, or remove previously posted information (one can only update/delete what they posted), and
(CT4) report problems to *LetsConnect Pty Ltd*.

Note:

a. You are free to choose what categories of items can be donated or sought, but you should have at least three different categories.

b. You are also free to design the appropriate forms needed for CT2 (and other client tasks), including what fields to use in each form. But each posting or user registration should have adequate details for the purpose of the tool. For example, there should be a textual description (and optionally, an image) of an item put up to be donated, and an item donor should have adequate contact details (e.g., name, email and/or phone).

Please have appropriate form validation on all forms. Although data received by the server might also be validated on the server-side, the purpose of browser/client-side validation is to reduce errors on the user side, before the data is even sent to the server (hence, preventing the waste of sending wrongly formatted data for example, helping to reduce wasted network data traffic).

The *LetsConnect Pty Ltd* company's **Administrator** will need to perform the following three tasks through the Web site, after logging in as an administrator:
(AT1) delete/edit postings from the site (whether on items or people/skills);
(AT2) change the appearance of the website: for example, allow the administrator to modify the background colour of the pages on the site or the colour of the navigation bar (you need only provide at least two options, such as to allow toggling between two different colours, etc); and
(AT3) add, modify, or remove advertisements shown on the *LetsConnect homepage*.

Advertisements are normally in the form of a picture with some text.
Do ensure that there is a logo (of your own design) of *LetsConnect Pty Ltd* (with a link to the homepage of *LetsConnect*), and a footer containing "About Us", "Contact Us", "Usage Policy", and other links (of your own discretion) that relates to the hosting company *LetsConnect Pty. Ltd.* Advertisements should be suitably displayed on the *LetsConnect homepage*.

Note that keyword searching for items, people or web pages on the site need not actually work, though at least, the homepage should have a search box, to search over pages on the Web site - the search box does not need to actually work (for the purposes of the assignment) but should appear on the homepage in the format according to the design guidelines.
You are free to simplify and use your discretion for aspects not specified here.

5. YOUR TASKS AND MARKING SCHEME (out of 100 marks)

TASK 1 [10 marks - report]: Design the static (perceptual) aspects of the Web user interface for the *LetsConnect* Website. For each of the tasks above, you need to submit some *sample* screen shots of your design. Along with the sample screen shots, provide some explanations that justify your choice of design layout, forms, colour schemes/combination, headings, etc. Explain how you followed the design guidelines in the lecture notes as much as possible.

TASK 2 [5 marks - report]: Design the dynamic (logical) aspects of the tool using SNN (Site Navigation Net) diagram. *Note that you are NOT required to draw iFIN*, only SNN is requested. This SNN diagram should reflect the navigation and the integration of the different screens in Task 1.

TASK 3 [80 marks - coding]: Implementation of the tool (note where sensible, use JavaScript for form validation):

1. CT1 [10 marks]
2. CT2 [40 marks]
3. CT3 [10 marks]
4. CT4 [5 marks]
5. AT1 [5 marks]
6. AT2 [5 marks]
7. AT3 [5 marks]

Note: you must complete the implementation of all the modes above. Note that the main emphasis of this subject is the client side usability, consistency and standard of the layout and data presentation. The connectivity with the database through PHP is performed mainly to demonstrate the flow of interactions. However, it is expected that all the modes above will have a real connection to a database. Do focus on the client-side functionality first, and then the server-side end.

TASK 4 [5 marks - report]: Heuristic-Based Usability Testing of the whole implementation

In this final task, you are required to perform a heuristic based usability testing. Note that this heuristic analysis / testing is to be performed by your own team members. You are NOT permitted to ask other people outside the members of your own team to perform the testing. You are required to go through each of the nine heuristic guidelines, and justify how your design and implementation fulfil the criteria in the guidelines. Provide examples, sample screens, etc. to validate your claims.

Further notes:

a. You do not need to submit ERD or database schemas for your assignment, though you would have created some tables and have a database schema for your tables used for the database of your system.

b. You can use tools like Balsamiq or https://moqups.com/ (in Chrome) to create mockups of page designs, but we may not be able to support you if you have trouble with them (many tools out there) - do find something usable (you can evaluate the usability of such tools first by trying to mock up a simple design you have on paper and see which is easiest to use!)

c. As for technologies to use, it is not compulsory to use the new tags in HTML5, you can just use whats available in HTML4, but it is fine if you use HTML5. Also, you can just use mysql (no need for mysqli) but you can choose to use mysqli as well. AJAX is highly recommended for the assignment but it is possible to do the whole system without using AJAX. You are expected to use HTML (4 or 5), JavaScript (for validation and so on), and CSS (for styling and layout) as appropriate, and PHP and MySQL on the server side.

ASSIGNMENT 2 (10%)

Assignment 2 involves extending the system from assignment 1 in a number of ways [marks below are out of a total of 100 marks]:

i). [40 marks - coding] Provide a mobile version of the Website, ensuring that mobile Web design guidelines are followed and that the website works on a small screen device such as a smartphone (or a small tablet, less than 6inch). You are expected to reuse as much as possible the work from Assignment 1.

ii). [10 marks - coding] Enable automatic redirection to the appropriate version of the Website depending on the size of the device screen and type of device (desktop or mobile).

iii). [30 marks - coding] On mobiles (with GPS capability) accessing the *LetsConnect* Website, allow users to upload their locations, and build functionality to visualize, using Google Static Maps and AJAX (GeoLocation API), the positions of clients on a map (e.g., via a marker or an icon/image).

iv). [10 marks - coding] On the map shown in part (iii) above, provide the capability so that the user should be able to click on the clients shown on the map to see their item/skill requests and/or item/skill availability.

v). [10 marks - report] Provide a brief documentation (no more than 3 pages) of the design of the mobile version of the Website (e.g., discussing changes from the desktop/laptop version and giving rationale for any changes made, use screenshots or paper sketches as illustration, arguing why certain changes are made and how the mobile version is tailored to the mobile environment), and an evaluation of the Website according to mobile Web design guidelines.
[Test with the latest browsers that support HTML5, e.g., Google Chrome, etc]

END OF DOCUMENT