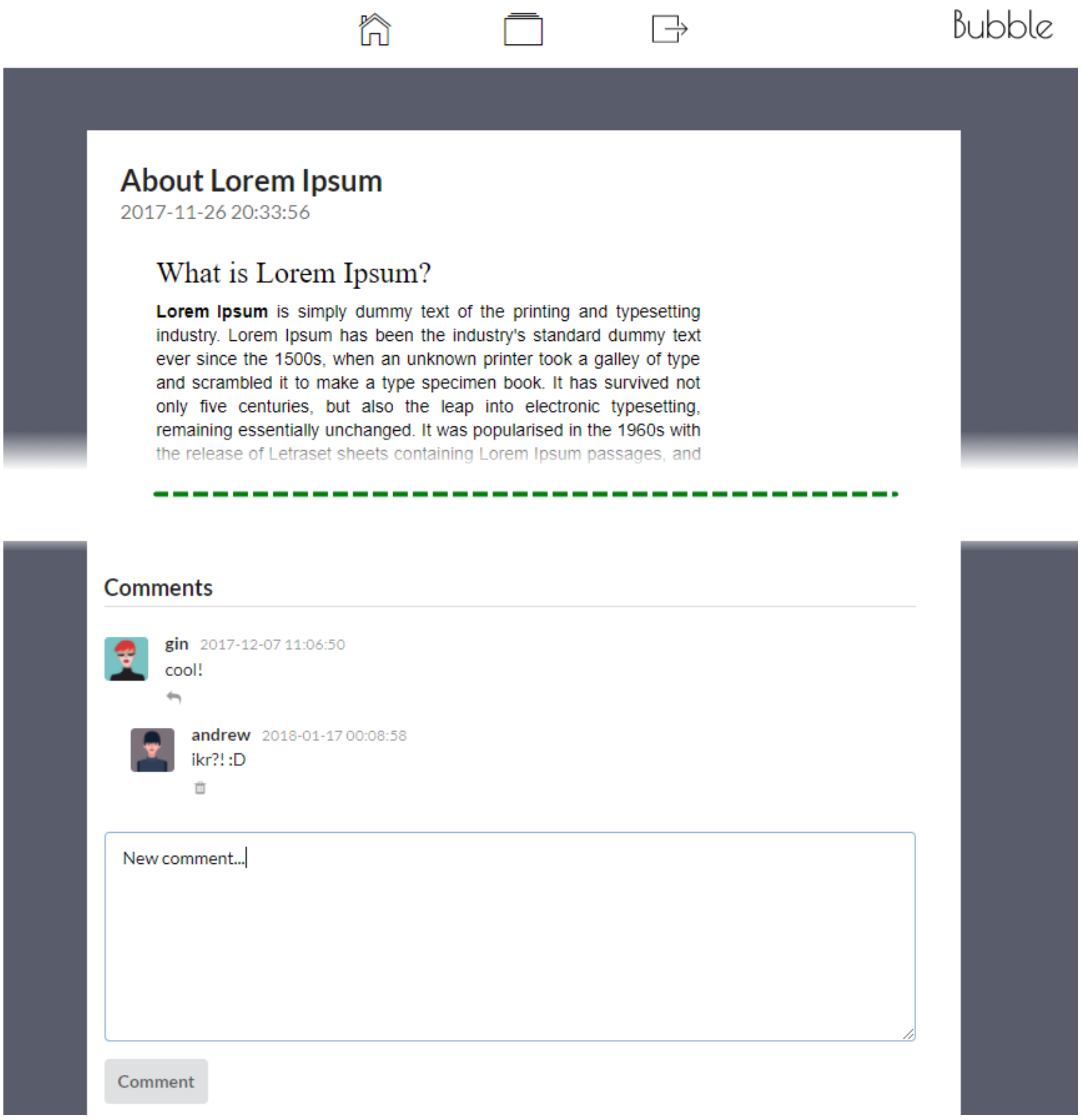
THE UNIVERSITY OF AUCKLAND NEW ZEALAND

THE UNIVERSITY OF WAIKATO Te Whare Wānanga o Waikato

PGCert in Information Technology

Final Project - A Personal Blogging System



Bubble

About Lorem Ipsum
2017-11-26 20:33:56

What is Lorem Ipsum?

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and

Comments

gin 2017-12-07 11:06:50
cool!

andrew 2018-01-17 00:08:58
ikr?! :D

Credit: “Bubble Blog” (Emma Zhao, Tongxin Xie, Qian Peng, Xingjian Che)

Important Dates

- **Friday October 18th:** Project introduction
- **Tuesday November 5th:** Source code submission
- **Wednesday November 6th:** Presentation day
- **Friday November 8th:** Final report submission

Introduction

In this assignment you will develop a blogging website using a combination of the programming skills you have learnt through the *Programming for Industry* and *Programming with Web Technology* courses. The snapshot shown above is taken from a previous PGCert IT student group's submission.

Through the web site, users can register for an account, which is needed to be able to post articles and to leave comments on others. When logged in, they have full control of the content they have authored: creating, updating and deleting their content and comments.

The functionality you need to provide to implement the blogging system, which is detailed below, has been divided into two sections: basic functionality, which is compulsory, and advanced features. For advanced features, there are a range of features to choose from—you do not have to implement them all.

This project is a team project - each of you will be working in groups which will be assigned by your lecturer. Make sure to name your team something memorable!

Team Deliverables **(worth 20% overall)**

The team portion of this project consists of **100 marks total**, and is worth **20%** of your final grade for both the *Industry* and *Web* papers in the certificate. The marks are comprised as follows:

Deliverable	**Marks**
Implementation of compulsory features	*30 marks*
Implementation of advanced features	*45 marks*
Code style	*15 marks*
Daily stand-ups	*10 marks*
Presentation & demonstration	*0 marks*

Details of the individual deliverables are given in these subsections.

Implementation of compulsory features **(30 marks)**

There are a set of compulsory features which comprise the basic functionality for a blogging system. These are detailed in the "compulsory features" section below. Your team **must** implement **all** of these features adequately to receive full marks for this section.

Implementation of advanced features **(45 marks)**

There are a wide range of additional features which could be implemented to improve the functionality and user experience of your team's blogging system. These are organized into **feature packs** which are detailed in the "advanced features" section below. Your team must select and implement **three** of these feature packs, for **15 marks each**.

Code style **(15 marks)**

Your code must be easily understandable by third parties, and conform to best practices. This includes the use of appropriate variable and identifier names, sufficient commenting, and adherence to applicable patterns such as DAO and Web-MVC, amongst other considerations.

Daily stand-ups **(10 marks)**

Each weekday during the project (other than public holidays), your team will be required to report progress to the lecturer. Each team member must be present at every meeting. Further details are available in the *Project Management* section below. The meetings will be short - approximately five minutes per team per meeting. Evidence of good teamwork is required at these meetings - your scrum master should be able to see and agree upon a fair workload allocation for each team member. Evidence of good project planning should also be visible in these stand-ups, via a team Trello board.

Presentation & demonstration **(0 marks)**

On **Wednesday the 6th of November**, each team will get the opportunity to present their project to the rest of the class, and other staff and guests. This is your chance to show off all your hard work and should be a fun session.

Each team will be allowed 15 minutes to speak, followed by a 5-minute Q&A session. Presentations should be professional, be slideshow-based (i.e. attempting to do a live demo is *not* recommended), and focus on the overall system architecture and features of your web app, rather than delving into low-level implementation details. Each member of the team is expected to speak during the presentation, as well as answer questions during Q&A.

Following the presentations, all attendees will get the opportunity to try out each team's project. Your projects *must* be deployed to the sporadic server by this date.

Individual Reflective Report **(worth 10% overall)**

In addition to the team component, you should submit an **individual** reflective report (each team member must write their own), which comprises **10%** of your final grade for both the

Industry and *Web* sections of the course. This is due on **Friday the 8th of November**. The report must cover the following topics:

- In your own words, explain how the system as a whole has been designed;
- Detail your particular contributions to the team and project; you are expected to have worked on front-end and back-end so outline what you did on both
- Detail which topics, taught in class, have been used within the project, and where;
- Detail any topics or technologies, which were not taught in class, that you have used, and where;
- Describe the lessons you have learned from working in a team. What are the benefits, and are there any drawbacks or difficulties? How have those been overcome in your team?

The length of the report should be approximately **four pages** in **IEEE two-column format**. Word and LaTeX templates for the report are available here.

Compulsory Features

Your team must implement the following compulsory features, which comprise the basic functionality of a blogging system:

1. Users must be able to create new accounts. Each new user should be able to choose a username (which must be unique) and a password. At minimum, a user's real name, date of birth, and country should also be recorded, along with a brief description about themselves.
2. Users' passwords should not be stored in plaintext - they should be appropriately hashed and salted.
3. When creating an account, users must be able to choose from amongst a set of predefined "avatar" icons to represent themselves. Users must also be able to upload an image from their computer, from which a thumbnail can be generated for use as a custom avatar.
4. Once a user has created an account, they must be able to log in and log out.
5. Users must be able to browse a list of all articles, regardless of whether they are logged in or not. If logged in, they should additionally be able to browse a list of their own articles.
6. When logged in, users must be able to add new articles, and edit or delete existing articles which they have authored.

7. Articles must be able to have at least one image uploaded with them; images should be uploaded with proper file uploads and not stored in your SQL database.

8. When logged in, users must be able to comment on articles and comments. It must support comments on comments to at least 2 levels of nested comments; i.e. comments on comments on comments. Users must also be able to delete any comments they have written, as well as any comments on articles which they have authored.

9. Users must be able to edit any of their account information, and also be able to delete their account.

10. The website must have a consistent look and feel, and must be responsive.

Using default libraries for CSS and JavaScript like Bootstrap, w3.css or similar is ok, but do not use any commercial or freely available 'website templates'. If in doubt, *check with your lecturer first*.

Advanced Features

Your team must choose and implement **three** of the following six feature packs detailed in this section to improve the functionality and user experience of your blogging system.

Pack One: Administrative interface

An administrative interface should be implemented using Swing, JavaFX or Web technologies that allows an administrative user to:

1. Add and remove users

2. Reset user passwords, by sending the corresponding user an email with a link to reset their password

3. Show and hide comments and articles

Pack Two: User interface

Your blogging system should provide the following improvements to the website's user experience:

1. WYSIWYG support for authoring articles

2. Informing new users whether or not their chosen username is already taken - *without* the user having to submit a form to find out (i.e. use AJAX).

3. The website should be styled using a distinctive theme, going above and beyond default bootstrap / W3.css to give your website a clean, professional and unique look. Your theme should not be too minimalist if you choose this pack; you must demonstrate some more complex CSS.

Pack Three: Feature enhancements

Your blogging system must provide the following extra features to users:

1. When creating new accounts, users should be verified as human using a Google's reCAPTCHA.

2. Users must be able to enter a date when authoring an article. The date should default to the current day, but the user can change this to any valid date (past or future) they wish. If the user enters a future date, the article shouldn't be visible until that date.

3. Users should be able to **search** and **sort** article lists by *article title*, *username*, and *date*. Users should be able to use **search** and **sort** functions independently or jointly.

Pack Four: Multimedia

Your website should incorporate the following support for multimedia:

1. Users should be able to upload any number of images to an article. Multiple images per article must be supported, and these images should be able to be added and removed when editing existing articles, as well as when authoring new ones. Ideally, if you're also implementing Pack Two (see above), then your WYSIWYG article editor should allow images to be uploaded anywhere within the article's content. Your images should be uploaded with a proper file upload and not to your SQL database. Integrating this with the WYSIWYG can be a bit time consuming so dedicate some time to researching this and the best ways to do it.

2. Users should be able to upload audio and video files to an article. Support for just one audio / video item per article is ok.

3. Users should be able to embed YouTube videos within an article. If implementing a WYSIWYG editor, these embedded videos should ideally be able to be placed anywhere within the article's content.

4. Users should be able to browse a multimedia gallery showing all multimedia content that's been uploaded to any article. Users should be able to switch between looking at just their own multimedia, or content from all users. When not logged in, users should still be able to browse all content.

Pack Five: Robustness & security

Your website should implement the following features to make it more resilient to attacks and unexpected user input:

1. In addition to the standard login / logout mechanism required by the compulsory features, users must be able to log in using a 3rd-party authentication system (SSO), such as "log in with Facebook", or "log in with Google", etc.

2. You should comprehensively check all input, and provide appropriate non-default error responses when required. What happens when users browse to non-existent pages? What happens when users bypass your HTML5 / JavaScript form validation and submit incorrect values (this is very easy to do with appropriate tools)? What happens if a malicious user attempts SQL injection? These questions and more should be considered!

3. Any other items / checks from the OWASP Top 10 which may be applicable. Go through each item in the list and consider whether it is appropriate to consider for your project. Ask the lecturer if unsure.

Pack Six: Roll your own pack

Do you have some amazing features you want to implement, which aren't included in the other five packs? If these features are sufficiently impressive and complex, you can make your own feature pack from them. The sky's the limit - but you must **consult your lecturer** to make sure your desired features will meet the requirements.

Project Management

There are several project management considerations to keep in mind while working on this project.

Teamwork

With the exception of the reflective report, the rest of the project is a team project. You will be expected to work with members of your team to effectively come up with a list of requirements, prioritize that list, and divide the work up amongst team members. Make sure to maintain good communication with your group and lecturers if anything affects your attendance and/or ability to contribute to the project. While working on the project, also keep in mind that each team member will need to demonstrate that they have worked on both the front-end (HTML / CSS / JavaScript) and back-end (Servlets / JSPs / MySQL), and that they have contributed equally and fairly to the team; teams should support group members to work on a variety of parts. Make sure to outline your contributions to front and backend in the final report.

Those considerations notwithstanding, how you divide the work amongst your teammates is entirely up to you, but **your scrum master (i.e. the lecturer) must agree on your team's proposed work breakdown.** Your team will lose marks if there is evidence of the group having poor teamwork or unfair task allocation; if there are issues with individuals this will be addressed on an individual basis.

Pair Programming

It is *compulsory* to do pair programming for this project. Each team member must demonstrably spend some of their time pair programming, both as the driver and as the navigator. In a group with four people, having two pairs will be far more effective than trying to split the work four ways. In a three-person group, difficult parts of the project can be overcome more easily with two heads instead of one.

Communication

Remember to organize some easy way in which your group can communicate – especially if you're not working in the same location (though working in the provided lab space for the majority of the time is strongly encouraged). Facebook works well for this, but if you don't want the distraction, we recommend trying Slack. Or, feel free to use any other tool your group agrees upon.

Code Sharing

It is vital to properly utilize version control to reduce problems when working on the same codebase. The first thing your team should do is create a GitLab repository, which you'll all use collaboratively. We recommend use of the Forking Workflow, as demonstrated in the “advanced git” lecture. A video from the University of Waikato is available here, which explains a little more about how to use git collaboratively in an effective manner. It is recommended that you investigate how to create a group in GitLab to house your shared repository. Remember to work on small features and merge regularly as resolving merge conflicts can take up a lot of time if you do not do it regularly.

IMPORTANT: You must also setup your initial repository with an appropriate ‘.gitignore’ file; you can use one of the ‘.gitignore’ files from one of the lab projects or research how to write your own.

Demonstrating Progress

You will be required to keep an up-to-date visualization of your team’s progress at all times. To do this, your team should set up a Trello board. This free online tool will allow your team to easily keep track of tasks, add them to different lists such as “To-Do”, “Doing”, “QA”, and “Done”, assign tasks to team members, and color-code the tasks for ease of viewing. You will also add your scrum master / lecturer to your board so they may keep track of your progress easily.

During the regularly-scheduled class times, you will be required to make a short progress report to your Scrum master. This will involve a stand-up session where your team will briefly report on what you’ve done, what you’re currently doing, and what you still need to do later.

Note: Keeping track of progress this way should not just be considered “busy-work” – it serves a real purpose, in that your team will be able to set clear goals and keep them in sight at all times!

Submission instructions

Please submit your project source code and report to Canvas / Moodle by their respective due dates (mentioned above). The report should be a single **pdf** document, while the project source should be a single **zip** file.

In your project zip, please also include an **sql** script showing your database tables, and a **readme** file with the following details:

- The URL of your deployed project
- At least one username / password combination for an existing user in your system with some already-published articles & comments