CSC1106
Web Programming
Group Project

BACKGROUND

In this project, you will have the opportunity to immerse yourself in the dynamic world of web development by creating a robust and user-friendly web application. With the freedom to choose from a selection of approved programming languages and frameworks, including Ruby on Rails, Python Django, PHP Laravel / Symfony, Java J2EE Spring, and ASP.Net, to develop an innovative web solution tailored to meet specific business needs.

The primary objective of this project is to leverage your technical skills and creativity to develop a web application that encompasses functionalities from various domains, including ERP (Enterprise Resource Planning), CRM (Customer Relationship Management), CMS (Content Management System), LMS (Learning Management System), or MIS (Medical Information System). By exploring these diverse concepts, you will gain invaluable insights into real-world applications and industry best practices.

Throughout the assignment, you will have the opportunity to collaborate with your peers, consult with the module lead for guidance and support, and showcase your expertise in web development. Your deliverables will include a fully functional web application, accompanied by comprehensive documentation detailing the project's requirements, design decisions, and implementation details.

INTENDED LEARNING OUTCOME (ILO)

1. Proficiency in Web Development Technologies: Students will master various web development technologies, including Ruby on Rails, Python Django, PHP Laravel / Symfony, Java J2EE Spring, and ASP.Net, to build scalable web applications.
2. Application of Concepts from ERP, CRM, CMS, LMS, and MIS: Students will apply real-world system concepts to develop web solutions addressing business needs, gaining practical insights into industry practices.
3. Critical Thinking and Problem-Solving Skills: Students will enhance critical thinking and problem-solving abilities by analyzing requirements, designing solutions, and troubleshooting technical challenges in complex web development projects.
4. Effective Communication and Collaboration: Through teamwork, consultations, and presentations, students will develop communication skills to articulate ideas, justify decisions, and solicit feedback for continuous improvement.

PROJECT SCOPE

Develop web applications based on ERP (Enterprise Resource Planning), CRM (Customer Relationship Management), CMS (Content Management System), LMS (Learning Management System), or MIS (Management Information System) concepts.

FEATURES TO CONSIDER

1. Integration of ERP functionalities for managing resources, such as inventory, finances, and human resources.
2. Implementation of CRM features to streamline customer interactions, including lead management, customer communication, and sales tracking.
3. Development of a CMS for efficient content creation, publishing, and management.
4. Design and implementation of an LMS for online learning, course management, and student tracking.
5. Integration of MIS functionalities for data analysis, reporting, and decision-making support.

SAMPLES

To gain a better understanding of the concepts, conducting background studies and literature reviews is a good way to kick-start the process. There are many powerful and free open-source samples available online that you may reference and use to design your system. Some of these samples include:

1. ERP (accounting): Akaunting (https://akaunting.com/)
2. ERP (HR): MintHCM (https://minthcm.org/)
3. Bank System: Cyclos https://www.cyclos.org/
4. LMS: Moodle (https://moodle.org/)
5. MIS: Open Dental (https://github.com/OpenDental)

SCHEDULE (RECOMMEND)

1. Week 01, project brief, group formation.
2. Week 04, consultation.
3. Week 06, first deliverable submission, presentation, and product test.
4. Week 10, consultation.
5. Week 12: second (final) deliverable submission, and presentation.

MARKING CRITERIA

1. [50%/20%] Design Concept and Commercial Value: Evaluate the conceptualization and execution of the design, considering its potential commercial value and usefulness to the target audience. Assess the alignment of the design concept with market trends, user preferences, and industry standards, as well as its potential to attract and engage users effectively.
2. [30%/20%] Design and User Experience (UX): Evaluate the design elements of the website, including layout, typography, color scheme, imagery, and overall aesthetic appeal. Also, consider the ease of use and intuitive navigation for the end user.
3. [20%/40%] System Complexity: Assess the complexity of the web development project, considering factors such as the sophistication of features, depth of functionality, integration of external services or APIs, and overall architectural complexity. Evaluate how effectively the project addresses the specified requirements while managing complexity, scalability, and maintainability. Consideration should also be given to the appropriateness of the chosen level of complexity relative to the project's scope and objectives.
4. [0%/10%] Functionality Implementation: Evaluate how effectively the required functionality is implemented, including features such as forms, user authentication, database integration, dynamic content generation, and any other specified requirements.
5. [0%/5%] Testing and Debugging: Assess the thoroughness of testing and debugging processes, including the identification and resolution of bugs, cross-browser compatibility testing, validation of user input, and overall robustness of the website.
6. [0%/5%] README: Evaluate the completeness and clarity of the README file accompanying the project. Assess the README's ability to provide essential information such as project description, installation instructions, usage guidelines, dependencies, troubleshooting tips, and any other relevant details. Consider the readability, organization, and overall effectiveness of the README in facilitating understanding and usage of the project by others.
7. [0%/extra 10%] Deployment: Assess the deployment process and implementation of the website on a hosting platform. Evaluate factors such as deployment strategy, configuration management, version control integration, server setup, domain management, SSL certificate installation (if applicable), and any other aspects related to making the website accessible to users on the internet.

GROUP FORMATION & FAIR WORKLOAD ARRANGEMENT

A group of eight students should be formed for this project. The group should engage in regular and open discussions to complete the web production successfully. To fulfil the project requirements, such as complexity, at least four modules/components should be designed within the system. It is recommended that students pair up in twos and utilize pair programming techniques to enhance the quality of production.

DEPLOYMENT

Bonus marks will be awarded to groups that deploy their project to Microsoft Azure. The required resources include Virtual Machine, Web App, and SQL Database. For guidance on other components, please consult the module lead. You must show this intention by Week 04 during consultation.

SUBMISSIONS

- The Lead is responsible for submitting following materials on behalf of the group.
- Ensure that submission is made on or before due date (refer to xSiTe).
- First submission includes:
  - Source code.
  - Presentation slide.
  - Presentation and demonstration. *(online, remote, real-time, Singapore AM*)*
- Second submission should include:
  - Source code.
  - README.
  - Presentation slide.
  - Presentation and demonstration.
- File Naming: name all files in small case with following patterns.
  - where ## is your group number, such as 03 or 22.
  - where $$ is deliverable phase, either 01 or 02.
  - A README in DOC/DOCX format: "g##_ d$$_readme.doc[x]".
  - A presentation file, in PDF format: "g##_ d$$_slides.pdf".
  - A compressed file in ZIP, not exceeding 100MB, containing all source code and related materials: "g##_ d$$_product.zip".

PEER EVALUATION

- Definition and Purpose: Peer evaluation is an effective collaborative learning strategy that asks students to reflect on contributions made by peers in group work. Related to self-assessment, peer evaluation encourages students to critically examine the work of peers, and reflect on the meaning of quality work in general, especially when consulting a detailed rubric or checklist as a guide. The key for successful peer feedback is a constructive, honest environment in which students feel safe to share honest, yet helpful criticism. (Ref: University of Wisconsin-La Crosse)
- The group should discuss and fairly distribute the workload among its members. Open discussions should be held to reach a consensus.
- Complete peer evaluations within 3 days after each deliverable is due.

<div align="center">=== Happy Programming ===</div>