ITWS Software Development 4700/6700

Final Project for fall 2019

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1. **Objective**

This project assignment is to practice, enhance, and integrate the learning of software project management and development through developing a three-tier web application.

2. **Group Work**

You could work with a group up to three team members. One group submission is acceptable.

3. **Grading**

10% for software project management, 20% for documentation, 10% for presentation, and 60% for code implementation.

4. **Requirements**

In addition to the development and deployment of a runnable three-tier web application, the following aspects need to be addressed in this project:
- Software project management
- Software project documentation
- The tools for software project management and development
- Software requirement analysis using use case diagrams
- Software design using UML diagrams
- UML design patterns
- Software testing
- Version control for source code and documents

5. **Project Example**

- The following link shows a 3-tier E-commerce project in the NetBeans environment using Java technology.

    https://netbeans.org/kb/docs/javaee/ecommerce/intro.html

    https://netbeans.org/downloads/ (When install, choose Java EE or All.)

6. **Project Alternatives**

- You could use the project example above as a template and apply your web content, such as a bookstore, a movie store, or a game store, etc.

- You could also choose a different project of similar complexity using different software frameworks or languages, such as a mobile application, AngularJS framework, MongoDB, Node.js, Ruby, etc.

7. Required Deliverables

7.1 Software Project Plan

It should state the following:

a. The project overview
b. The project objective and scope
c. The stake holders (the funders/customers/users)
d. The project team organization: the project owner, the management team, the technical team, etc.
e. The project management: How does the team process to achieve the goal, such as the methodology followed, management model, activities, and the tools used?
f. The project deliverables
    - Software product
    - The artifacts of the each phase of the project
g. The project schedule for each deliverable
h. Quality assurance
i. Software change management (The process of changing requirements)

Reference: (The following documents are posted on the LMS)

- IEEE 1058-1998.pdf: "IEEE Standard for Software Project Management Plans"
- projectPlanTemplateExample.docx
- projectPlanExample.pdf
- More online

7.2 The Software Functional Specification Document

- The general guidance for writing the specifications is "SMART" which means:
    1. Specific
    2. Measureable
    3. Achievable
    4. Realistic
    5. Testable
- The "Use Case" diagram should be included in the functional specification.

Reference: (The following documents are posted on the LMS)

- o IEEE830.pdf: "IEEE Recommended Practice for Software Requirements Speciation". Its part 5 is more related to our purpose
  - o funcSpecTemplate.pdf
  - o funcSpecTemplate-2.pdf
  - o funcSpecExample-1.pdf
  - o funcSpecExample-2.doc
  - o More online

7.3 The Software Design Documentation

It describes how your software system is designed to meet the functional specification, its main components and their integration. The following diagrams should be presented in this documentation:

- o System architecture diagram
- o Component diagram
- o Data model diagram
- o Class diagram
- o Sequential diagram
- o Deployment diagram

7.4 The System Configuration Documentation

- Should contain the system information for hardware and software for the purpose of development, testing, and deployment (delivery, replication)
- o (Note: This is completely different from the software change management.)

7.5 The Quality Assurance Plan

- This is to plan how to assure the quality of the project, such as review, unit testing, integration testing, customer trial period, etc. (This part can also be included in the project plan)

8. Submission Requirement

The submission should include your presentation slides and all project deliverables including documentations and runnable software in either a zipped package to LMS or using your GitHub account. The later approach requires a submission of the GitHub URL to the LMS for the TA and Instructor to download your project source code and files for grading.

9. **Class Presentation Requirement**

- Develop PPT slides
- Give an overview of your project
- Show how you managed the project: the quality focus, the process management model and methods, the tools, the milestones, the schedule, the task list, the burn down chart, the version control, bug tracking, etc.
- Demonstrate your software functions
- Demonstrate your design and code, the system architecture, the main components, the data model, the UML diagrams, the sequential diagram, and any other technical design issues.

10. **Milestones**

10.1   Mandatory LMS submission and class presentation

Week 15, 12/03, Tuesday	Submit the slides, required documentations and code package	Before 11:59 PM
Week 15, 12/06, Friday	Class presentation	

10.2   Other suggested milestones

Week 3	Assignment available	
Week 8	Draft of the project plan	
Week 10	Draft of the function specification	
Week 12	Draft of the design documentations and the majority of coding	

Hope you enjoy doing this project. Please feel free to ask if you have any questions.