CSE 4214 – Introduction to Software Engineering

Term Project Description

2016 Summer Olympics

Objectives
• Learn teamwork.
- Task distribution, communication and coordination.
- Learn to break down tasks and define responsibilities.
- Learn to use supporting tools for team collaboration.
• Apply problem definition techniques.
- Learn to elicit and specify requirements.
- Learn to use object-oriented analysis techniques.
• Create solution systematically.
- Learn to create design models.

Project Description

Rio de Janeiro, Brazil 2016 Summer Olympics Management System

Overview

The Summer Olympic Games (SOGs) is an international multi-sport event occurring every four years and watched all over the world. The City of Rio de Janeiro in Brazil which was awarded SOGs is looking to implement an integrated system to manage the operations of the summer games. To that end, the Rio de Janeiro city IT Business Relationships department has contacted

your firm to undertake the design of the management system. The design provided by your firm will then be implemented offshore for economic purposes.

The main driver behind the (SOG) is the schedule of its games. Based on the schedule of the games the following aspects are considered:

- Tickets are produced and prepared to be sold to the public.
- The competing athletes are notified of the time and place for their competition.
- The Security department is notified to provide security guards and the necessary security equipment.
- The medals ceremonies are scheduled.

Tickets become available to the public at full price. However, athletes and employees may requests tickets for free. Athletes' family members may get tickets at a discounted price (25% discount). If the schedule of an event changes, whether the change was a venue or a date change, its corresponding tickets are updated accordingly. Tickets are only sold for competition events, while medal awards ceremonies are free to all.

Athletes are registered into the system and information about them is collected. Athletes may also request additional security guards from the Security department to escort them anywhere they go. The athletes can use the system to check their personal schedule of competition events and the schedule of the medal awarding ceremonies in case they won a medal. Athletes may also schedule autograph sessions for their fans at their discretion. Athletes cannot schedule autograph sessions at a time where they are scheduled for a competition event or a medal awarding ceremony. Finally, athletes cannot request free tickets for events in which they compete in.

The medal awards ceremonies are scheduled based on the schedule of the games to ensure that there is no conflict with respect to an athlete who is supposed to attend a ceremony while also scheduled to compete at an event. The schedule of the games is of higher priority that the schedule of the medal awards ceremonies therefore the medal awards ceremonies are rescheduled according to if the games schedule. Upon finalizing the date and time of an award ceremony, the Security department is notified to provide security guards and the necessary equipment. Also, upon finalizing the date and time of an award ceremony, the involved athletes are notified.

Once the Security department receives a request for security personnel, the request is forwarded to the Security Chief Officer to approve it and determine the number of security guards to assign for the request along with the necessary security equipment. All security personnel including the Security Chief Officer are considered employees of the SOGs and therefore they can get free tickets. However, security personnel cannot get tickets for any events occurring at a time where they are "On duty". They may only get free tickets for events occurring at a time where they are "Off duty".

The software need to be available in desktop, tablet and smartphone versions.

Important Notes:

- State any assumption you make.
- Whenever possible, document alternative design solutions.
- Submit via blackboard
- The submission is due before the class on the due date. Late submission will not be accepted.
- Team members are encouraged to utilize their assigned private discussion forum on Blackboard, and communicate through it.

Project Operational Guidelines

The project will be carried out in teams of 4 students. Each student in a group will work as a group leader for a phase and it will be rotated among the group members. **The submission of the documents will be done via Email to melattar@cse.msstate.edu. All emails must have a prefix in the subject field as such [CSE4214-Group X- Phase X].**

Phase 1: Software Project Management Plan

[20 Marks] Due: September 21, 2015
11:00pm

The Software Project Management Plan is prepared at the commencement of the project to structure the activities that must take place during the project and to provide a tool against which progress can be measured. An example document outline that can be used as a model for the Software Project Management Plan is presented as follows:

1. Software Project Introduction
   a. Project Overview
   b. Project Deliverables
2. Project Plan
   a. Project Activities/Milestones
   b. Project Schedule (Gantt Chart + Network Diagram) + Critical Path
   c. Project Responsibilities (Team Member Assignments)
3. Risk Management
   a. Risk Identification
   b. Risk Mitigation

Phase 2: Business Requirements Specifications

[30 Marks] Due: October 26, 2015
11:00pm

The Business Requirements Specification is a document, which reports the finding of the project team after analysis of the client's requirements. The document specifies the project team's proposed solutions relating to the software and hardware requirements of the system that is to be developed. It should be written in terms that the customer could understand. An example document outline that can be used as a model for the Business Requirements Specification is presented as follows:

1. Requirements
    a. Functional Requirements
    b. Non-functional Requirements
2. Use case Analysis
3. Domain Analysis (Conceptual Model)
    a. Identification of components/modules
4. Data analysis
    a. Data input/output
    b. Data storage
5. Prototyping
    a. Input Screens Format
    b. Output Screens Format
    c. General indication of flow of interaction

Phase 3: Design and Development

[30 Marks] Due: December 4, 2015
11:00pm

The software design document is prepared for programmers and future maintainers of the system, to specify the detailed architectural structure of the software. The document also includes test provisions that will be applied to the software developed. An example document outline that can be used as a model for the software design is presented as follows:

1. Behavioral Modeling
    a. Develop the design using Sequence Diagrams.
2. Object Oriented Design
    a. High level class diagram (domain model)
3. Refinement of the Domain Model
    a. Define any additional objects or classes, or new internal methods or attributes.

Phase 4: Project Presentation/Demo

[20 Marks] Week # 14 and 15

The team has spent last few weeks on the project and prototype has been developed. The aim of project presentation/demo is to summarize the project. The presentation should include the following points.

1. Introduce the team members and
2. Summary of the requirements, analysis, design and prototype phases
3. Demonstrate the functionality of the prototype application.
4. Discuss experience and issues with reference to the project.