C4 – Software Engineering – Assignment 2

Web and Cloud Development – Academic Year: 2012/2013

December 2012/January 2013

Note: This assignment description is based on a task used by DemonWare (Ireland) during their Software Engineering recruitment process. The original description is used with thanks, and has been amended to target the Google App Engine platform.

Application Scenario:

In an online computer game, players have persistent accounts which are stored on an internet server.

A player is identified by a unique user ID known as the "player tag". A player can also have zero or more other players as friends. Establishing friendships between players is a two-phase process: a player proposes friendship to another player, who can then either accept or decline the proposal.

A player can also be a member of a team (but does not have to be). A team consists of a name and a team ID, again both of them being unique. Each team has one member who is the administrator of that team, and has permission to remove other players from that team. No other player can remove players from a team. The "administrator" is the person who creates the team.

Tasks:

Create and deploy a Google App Engine application that implements the following behaviours:

Friends:

1. Create three players: Alice, Bob and Chuck.
2. Player Bob and Chuck propose friendships to Alice.
3. Alice accepts Bob's proposal, but rejects Chuck's.

Teams:

1. Continuing to use the created players: Alice, Bob and Chuck.
2. Alice creates a team.
3. Bob and Chuck join that team.
4. Bob attempts to remove Chuck from the team, but fails with an error.
5. Alice removes Bob from the team, which succeeds.

Assignment Description:

The above functionality is to be supported by mechanisms that work as follows:

1. A **Registration System** provides a means for any user to create a "player tag" for use with the Game System. Only registered Google accounts can access the Registration System, which logs the creation of each and every "player tag". Confirming the creation of a "player tag" is a two-step process: (1) the system sends an email to the Google account with details of the tag creation then, (2) the user responds to the email message to confirm. A mechanism needs to be designed to ensure the confirmation is only used once.

2. With a valid "player tag" created, a **Game System** provides the functionality described in the above scenario to logged-in users. The Game System can only be accessed by valid players – Google accounts should not be used for validation with this system, only the "player tag". The system needs to log all player interactions to the App Engine logging mechanism.

All coding is to be completed in Python 2.7 on the Google App Engine platform. You are to worry less about how your system looks are more about how your system behaves. If it's pretty, but doesn't work, you'll get no marks.

Your completed system is to be deployed to the Google App Engine cloud. As part of your submission, provide the URL that your system is running on.

Submission deadline: Thursday, 31st January, 2013 – 5:00pm.

Submission format: All code/resources sent as a ZIP archive to **paul.barry@itcarlow.ie**

Marks: Worth 15% of total grade: 5% for part (1) and 10% for part (2).