School of Design Communication & IT

INFT3050 – Web Programming

Assignment 2: Active Video Game Web Application

User Layer Analysis, Design and Implementation

Due 11:59pm Friday the18th of September, Semester 2, 2015.

*This assignment is worth **30%** of the course assessment.*

Assignment 2 can be completed individually or in groups of 2-3 students.

I. Introduction

Active Video Games have emerged as a promising technology for now and the future of combating obesity around the world. This is due to the high adoption and use of video games and their respective platforms by children and adolescents all over the world. It has been shown that increased time playing video games can contribute to increasing weight gain and an unhealthy life style. Active Video Games aim to change this dynamic by providing engaging and entertaining games that promote exercise as an integral part of game play. One suitable cross platform environment to provide this includes web based games. A web based active video game represents a convergence of technologies to provide what is term exertainment. That is, the ability to play video games or computer based entertainment while also performing some level of physical exertion to contribute to the game experience.

The objective of this assignment is to develop a simple but engaging web base 3 tier C#.Net active video game. In this assignment, you are required to firstly research all requirements for developing an intuitive Web Application that would have a long term appeal for the child and adolescent user. Then, you are required to develop an engaging Web Application that incorporates the identified requirements in the scenario that will be given in the next section.

II. Overview

You are the owners and main developers of a start-up company “NewU” that is specializing in developing Web Applications for the Exertainment market. You have been approached by a well-known Innovator (your Lecturer) to develop an Exertainment 3-tier Web Application called B.E.T.T.E.R (Battling Elemental Titans Through Exercising Routines). You have had series of meetings to understand the requirements of the Web Application that you are going to build. Below is the summary that outlines the specifications of the game technologies, design and functionality.

Technologies

- The game is to be web based using Microsoft Technologies. This includes using an IDE called Visual Studio, a development language called C#.net, a framework called ASP.Net, and a database backend called Microsoft SQL Server.
- It will be developed in three stages, each corresponding to each 'layer'/tier of the web application. That being: 1) The database or backend, 2) The middle or business layer, and 3) the user layer or interface.
- The game itself is 'text' based, in that there are NO requirements for real time animation or animation interaction. JPEG still files will be used to represent the characters, and 'static' images and other graphics can be used to make the web application more appealing.
- The 'ACTION' will be modelled using mathematical random based functions that you will be provided with, but will need to code into the application for 'Battles'.
- You may use a combination of HTML5 and other contemporary technologies to build the user interface, but by default normal ASP.Net pages will be sufficient.
- For submissions and demonstration purposes you may run the application through Visual Studio. It is preferred however that you spend the time to learn and understand how to deploy the web site using Microsoft Internet Information Server (IIS). This is Microsoft's web application server platform.
- All of the software is available to you for free as a student of this subject. You will need to download and install the software on your own machine. A username and password will be provided to you, along with a URL of the location to access to retrieve the software.
- You may use Visual Studio 2013 or 2012, MS SQL Server 2008 or 2012, and if you choose to do so, whatever version of IIS runs on your machine. For students taking this course in face-to-face mode all software is available already installed in the computer labs in the ICT building.

Game Design

- The basics of the game are best described as a 'text' based challenge battle game where players increase the abilities of their virtual characters through real world physical exercise.
- Each user is able to select a number of characters from FOUR distinct Elemental classes: Earth, Air, Water, and Fire. There are 4 levels of character evolutions in each Elemental class. Selecting a new player starts that character at Level 1.
- Within each level are a number of Experience Steps the character moves through to reach the next highest level. Exact details will be provided in the Business Rules for the assignment.
- Users gain experience 'Points' through 2 main ways, but not of equal weighting. The primary way to earn experience points for a user game character is through exercise. The web application needs to be user specific (hence requires a unique login first to access this page) to support this feature. So an individual user can enter their most recent exercise details and it is saved against their User ID. A bonus modification to the web application would allow the direct input of a pre-formatted XML file downloaded from a USB enabled exercise device (more details will provided at a later stage).

- The second minor way to gain experience points in through winning battles in the Elemental Battle Arena (EBA). Rules for experience points gained in winning a battle will be provided in a later section as part of the business rules.
- There is also certain bonus points added to a character during a battle match. For example, there is a cyclic nature between the elements which again will be defined in the Business Rules, such as Fire is Stronger than Earth, but Water is Stronger than Fire when characters are on equal Levels and Experience Steps. These and other business rules will need to be coded into the application by you as part of Assignment 3.
- Users are able to challenge other user characters even if the other user is NOT online. However, a report of all battles will be provided to a user when they login to their 'account'.
- Once a Character reaches the highest level it is entered into the Hall of Fame, and retires to become a God of Elemental Titans. The Hall of Fame can be accessed by all users, even if they are not logged in, but the owner of each Character must remain anonymous unless the owner Opts-In to have their name shown.
- Throughout the web application clear instructions and motivations must be given in regards to the importance of exercise and its relation to building better and stronger Elemental Titans.
- Keep in mind the game target demographic is Children and Adolescents between the ages of 7 and 14. Therefore, instructions, design, playability should also be aimed at this target audience.

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Application Requirements

- As stated this is to be a 3-tier/3 layer web application using Microsoft Technologies.
- As it is user based you will be required to maintain user accounts and details.
- So a basic and minimum list of 'pages' (functionalities) include:
    - A registration page
    - A login page
    - A main page with menu system
    - A character selection page
    - A character view page
    - A profile update page
    - A Exercise Upload page
    - A Challenge page
    - A Combat page
    - A battle summary page
    - A Hall of Fame page
    - A logout page
- Naturally you will also need to develop the backend database to support the Application. The database is to be designed and implemented in Assignment 1.
- The Business Layer and Logic will be implemented in Assignment 3. The full business logic and rules will be provided in that Assignment specification.
- The user interface is to be designed and developed in Assignment 2.

III. Assignment 2 Project Requirements

Below are the basic project requirements:

1. The design and development of a number of Microsoft ASP.Net pages (*.aspx)
2. The design and development of a consistent and intuitive logical layout.
3. The design and development of a consistent 'look and feel' to the layout.
4. A supporting document that provides evidence of your research into the background documents and a detailed explanation to support your design and layout decisions.
5. Encode all necessary Validation into the pages.
6. Provide in code comments for all pages.

IV. Knowledge that you need to have and Preliminary Steps

In order to successfully develop the set of assignments you need to at least have the following knowledge:

- C#.Net
- ASP.Net
- Microsoft SQL Server

V. Assignment 2 Tasks, Tables, and Deliverables

The following ASP.Net (c#) pages are what are at least required for Assignment 2. I only require the user layer pages for assignment 2. No C# class modules or 'code behind' pages are required.

The minimum numbers of pages are listed below, be aware this is just a starting list and you may find you need additional pages to provide the full functionality to the application:

- Welcome Page: this is a simple 'splash' start screen with a few basic navigation options that include Login and Register. It should also include a small description of what the game is and how to play including the Exercise element.
- Registration Page: A place where new users may register. It is advised that you use their email address as their username, and coming in assignment 3 ensure that a password is at least 8 alpha numeric characters long. You will also need to collect a parent email address to send a 4 digit Pin code to.
- Login Page: A simple page that asks for the user's username and password. If they have forgotten their password they should be able to click a link on this page "Forgot Password" that once clicked emails their password to the username provided (which is their email address).
- Main Menu Page: This is the traditional Home or Main screen from which all pages can return to and is the central management page for the application. It should be customised for an individual user by displaying their Name and Username on it in some location chosen by you, along with a list of their current characters (which they can click on for more information on), their exercise points balance, along with a menu system to link to other pages, and also a Logout link.

- Character Selection/Creation Page: This allows users to select and create new Characters. As they are new Characters they can only select the beginner first level character from each Element Class. Once a character is selected that can provide it their very own name.
- User Character's Management Page: This page allows the management of a Character and the ability to view all of the details of the character. This should include its current Level and Step within the level, its experience points, the number of battles it has fought with how many wins and losses.
- A Hall of Fame (HOF) Page: This lists all Users characters that have been retired to the Hall of Fame along with the Name of the Character owner. It should show is a well formatted manner the number of fights the Character won and lost, and the date the Character was first created.
- A Challenge Page: This page lists all other user characters (except their own) that a specific character can challenge to combat.
- A Fight Page: This is a simple page that shows the images of the two characters to fight each other (next to each other on the screen) with a big text Vs between them, the respective name of the Character, its statistics (Level, Step, Experience Points, Wins, and Losses) and the user name of the Character owner. Two buttons are required one labelled 'Cancel Fight' the other 'Begin Fight', clicking the 'Begin Fight' takes the user to the Fight Outcome page.
- Fight Outcome Page: This page is nearly identical to the Fight Page but is used to display the outcome of the fight. It should clearly show the user whether they won or lost the Fight Challenge.
- A Fight Summary Page: Used to provide all of the details of all the fights of a selected Character.
- An Exercise Upload Page: A simple text box and submit page form to enter the daily Exercise Points for a user. It is envisaged that it would have a second PIN/Password box that a parent enters to validate the actual exercise done by the User (presumably their child).
- An Exercise (Points) Management Page: This screen allows a user to allocate exercise points they have earned to their different Characters
- Logout Page: a simple page to confirm the user has successfully been logged out.

NOTE: your web application should have the appropriate branding also throughout it. For example, you have been provided the name of game along with the theme of the game.

THERE IS NO NEED FOR THESE PAGES TO CONNECT TO THE DATABASE. THESE PAGES ARE ONLY THE USER LAYER. NO DYNAMIC DATA INTERATION IS REQURIED.

THIS IS NOT a graphic and visual design assessment. Marks WILL BE awarded for the logical elements of the design such as functional layout, ease of use, flow and consistency of the menu and page styles, and ease of navigation. Marks will NOT BE awarded for how 'good it looks' from a purely graphic design perspective.

VI. Submission Procedures

You will need to deliver the following items for marking:

A. A complete directory and project of all of the User Layer files. This involves finding the correct Visual Studio Solution and Project Directory and all of its associated files.
B. The word document in which your background material and explanation of the layout and design are detailed.
C. You must submit all of your files in a ZIP/RAR file called “GroupName_Assig2.zip”.
D. A cover page with the name’s and student numbers of all group members.