

AS Coursework

A Quiz in C#

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# Background

Team Fortress 2 is a first person shooter game designed by Valve Software and released in October 2007. In the game, the player selects one of 9 classes with individual skills and roles on a team of 12 people. Their goal is to either defend a point when on RED team, or attempt to attack and take the same point if on BLU team. Some classes specialise in defence, such as the Heavy, and some specialise in attack, such as the Soldier, or even support, such as the Medic.

The system will have the aim of testing and building upon the user’s knowledge of Team Fortress 2, including its classes, weaponry, maps, items, and history. I have decided to base the quiz on Team Fortress 2 (or TF2) in order to assist those who are new to the game, and allow them the ability to familiarise themselves with the concepts and fundamental mechanics of the game before they play it themselves, or as they are playing it, permitting them to develop their skills further than someone only playing the game would be able to.

The quiz will develop the user’s knowledge on important facets of the game, as well as the underlying story if they are interested. It will assist the user in becoming proficient at the game’s general strategy whilst playing as different classes, as well as the more advanced tricks and techniques individual to each class (rocket jumping as the Soldier, sticky jumping as the Demoman, trickstabs as the Spy, etc.), allowing each individual user to place an emphasis on their class of choice and develop their skills with them as well as their general game sense.

# Client

The client this system is developed for is Gareth McKittrick, who is looking to improve with regards to TF2. He already has a basic knowledge of the game and its mechanics, although he would like to both increase and maintain his skill. He is interested in developing his skills in the game in order to compete efficiently in the game as his class of choice, the Soldier, as well as progress his capabilities with other classes in the game.

# Users

The user of the system will be people who are looking to develop their skills in TF2. This will be either: people who are new to the game and interested in developing fundamental skills which will be needed for success in the game, as well as more advanced, long-time players, who are looking to advance their skills further and utilise more complex techniques when playing their class of choice. The client also intends to use the system in an effort to develop his TF2 ability and skill, advancing his skill as some individual classes such as the Soldier as well as different classes. He also wishes to develop his ability in comparison to other users.

# User Requirements

1. The quiz will focus on users who are new to TF2, resources will be available for more advanced players looking to improve further, although the quiz will primarily focus on providing support for newer players learning the mechanics of the game for the first time.
2. The quiz will include a wide variety of questions to test the user on their game knowledge and skill. Users will be tasked to drag and drop the correct weapon name to an image of the weapon, guess the weapon based off their stats, with hints as to the correct weapon (year of release, slot it is used in, class it is used by)
3. The user will be able to gain certain achievements when meeting goals in the quiz. Some examples of achievements are as follows: a user will gain an achievement for getting a perfect score within the quiz, or using a certain character’s ability a total of 5 times.
4. Achievements will be able to be viewed on an achievements screen, as well as the criteria for unlocking new achievements within the quiz.
5. There will also be a showcase of the percentage of users who have unlocked a specific achievement.
6. If an achievement is unlocked by less than 10% of players, it its marked as a rare achievement, shown by a starburst effect around the achievement icon.
7. The quiz will contain the ability to select a character to represent the user throughout the quiz. The characters will be the 9 classes from TF2, and each will have a special ability which will be activated by pressing an ability icon in the bottom right of the question screen. If the ability is not available due to being uncharged or already used, the ability icon will appear greyed out. The special abilities for each character are as follows:
   * Scout – Double Jump – The user can skip the question, automatically getting it correct. Marked via a sound effect – 3 question charge
   * Soldier – Buff Banner – The user gains double the points for the next 3 questions, marked by an icon appearing over the character’s ability icon – 4 question charge
   * Pyro – Flare Gun – If the previous question answered was correct, gain triple the points for the current question. This is marked by a Critical Hit indicator appearing over the character’s ability icon – 3 question charge
   * Demoman – Eyelander – Exponentially gain more points for each question answered (0.5 per question answered, with a max of 2 extra points) but the bonus is lost if a question is answered incorrectly, rewarding skill when answering questions – Passive ability
   * Heavy – Brass Beast – Remove 2 incorrect answers from the potential answers to the current question. Removed questions will appear to have bullet holes, indicating they cannot be clicked – 2 question charge
   * Engineer – Teleporter – Return to any incorrectly answered question, allowing the user to receive another attempt at the question. This is marked by a display which appears as a red coloured screen with scanlines, showing each individual question number as a button. Each question can only be returned to once – Three-time use
   * Medic – Übercharge – Immunity for next 3 questions, allowing the user to not get a question incorrect whilst Übercharged, providing the user an advantage whilst answering unfamiliar questions. The usage of this ability will be marked by a red hue around the border of the screen and a static sound playing to indicate an Übercharged state – One time use
   * Sniper – Razorback – The user gains another tries on the current question, increasing their confidence when answering as they can be sure they have another chance if the question is answered incorrectly. Marked by an icon of the Razorback appearing over the character’s ability icon – 1 question charge
   * Spy – Disguise Kit – Switch to a different set of questions called BLU side questions, which are comparatively easier than RED side questions, however the user cannot switch back unless they get a question wrong, and their disguise is broken – One time use
8. Display of a splash screen including a loading bar which will appear on the screen for three seconds to permit the forms to load properly. The splash screen will also include the name of the quiz and a logo for the quiz.

Processes

* + Appears for three seconds
  + Includes text showcasing the percentage that the loading bar has progressed

Outputs

* After the loading bar is filled, the splash screen will be hidden, and the login screen will be shown

1. A login screen which will allow users to either log in with an account they have previously made and continue or choose to register a new account to use in the future.

Inputs

* Allow the user to input a username and a password and press a login button to enter their selection
* Allow the user to press a button which will send them to the register screen

Processes

* When the log in button is pressed, the username and password will be checked against a database containing the usernames and passwords of each account

Outputs

**If details are correct**

* Login screen is hidden, and the main menu of the quiz is shown

**Otherwise**

* The user will be prompted to re-enter their details, and the entry fields will be cleared
* If the register link is clicked, the login screen will be hidden and the register screen will be shown allowing the user to create an account

1. A register screen which would permit users to create a new account if they had not yet created one, permitting them to store their scores allowing them to return to the quiz later and retry it, permitting them to compare their newer scores with their previous attempts. The register screen also permits user to specify their class, telling them the ability of that specific class in the quiz

Inputs

* The user will enter their username and password of the account they would like to create
* Allows the user to press a button to return to the login screen

Processes

* When the register button is pressed, the username and password are checked against the database to ensure the account does not already exist

Outputs

**If account does not already exist**

* Account is added to database
* Register screen is hidden and main menu is showed

**Otherwise**

* The user will be told the account already exists and the entry fields are cleared, prompting to re-enter their details

1. A question screen which can show a multitude of differing question types. The screen will showcase a question, a timer, a marker of the user’s individual score in the quiz, and the options which the user can select to answer the question.
2. A drag and drop question type, where users drag their answer to a box under the question or a picture and are told whether they have answered correctly

Inputs

* User drags answer to box or picture

Processes

* Check whether the user has chosen correctly

Outputs

**If answer is correct**

* + - Display correct screen

**If answer is incorrect**

* + - Display incorrect screen

1. A multiple-choice question type, where users click a button to select their answer and are told if they answered correctly

Inputs

* User chooses an option from the given choices

Processes

* Check whether the user has chosen correctly

Outputs

**If answer is correct**

* + - Display correct screen

**If answer is incorrect**

* + - Display incorrect screen

1. A true or false question type, where users are tasked to choose whether the statement is true or false, and are told whether they have answered correctly

Inputs

* User selects either true or false

Processes

* Check whether the user has chosen correctly

Outputs

**If answer is correct**

* + - Display correct screen

**If answer is incorrect**

* + - Display incorrect screen

1. A guessing game, where the user will make a guess of the weapon from all the weapons present in TF2. As the user types, a drop-down menu will appear which showcases weapons which contain the text the user has typed in order to assist them in guessing. When the user guesses incorrectly, they will be told whether different elements of their guess are right (class that uses the weapon, which slot (primary weapon, secondary weapon, melee) the weapon is used in, what year it released, what qualities it can be)

Inputs

* User makes a guess

Processes

* Check whether the user has guessed correctly
* Display drop-down with weapon names to assist user in guessing

Outputs

**If answer is correct**

* + - Display correct screen

**If answer is incorrect**

* + - Display hints for user

1. A correct and incorrect screen, which will showcase whether the user has correctly answered a question. Text would be displayed on the screen, showcasing the state of the user’s answer, as well as the correct score being applied.
2. An ending screen, which will show the user’s score, a rank, ranging from A to F, represented by item rarities present in TF2, including a specific rank for a perfect score, as well as a leaderboard which will display their score in relation to others, as well as the general performance of other on the quiz so the user will compare themselves to the average and develop their skills for the next attempt on the quiz. The ranks are as follows
   * Unusual – Perfect
   * Strange – A
   * Genuine – B
   * Vintage – C
   * Unique – D
   * Basic – E
   * Junk – F
3. A stats screen, where the user will be able to view their best and most recent performance in specific quiz types. This will also showcase their rank in relation to other users in a leaderboard, as well changing their specified class to utilise new abilities. Users will also be able to see their performance as certain classes
4. A leaderboard screen, where users will be able to view their performance in relation to other users. Users will be able to view their rank in relation to other users, and see how they compare both overall across every quiz and on a per-quiz basis.