SOFTWARE

REQUIREMENTS

SPECIFICATIONS

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1. Introduction

1.1. Purpose

The purpose of this document is to give a detailed description of the requirements for the applications developing for our customer, *Zenterio*. The document will include descriptions and specific requirements for all three applications. This document is primarily intended to give our customer a detailed insight to our applications and to be used as a reference for development of the applications.

1.2. Scope

1.2.1. Sprint

"Sprint" is a multiplayer quiz game with multiple choice answers. The game is supposed to be played along with family and friends which means that the questions should be suitable for people of all ages and backgrounds. To further enhance this aspect of the game, the user will be able to select which categories of questions to play with so that it is fair for everyone involved. The game can be played by up to six players and the game length can be adjusted depending on how long the players want to play.

The main concept of "Sprint" is that by answering questions correctly, the player will earn points that move him/her closer to the finish line. The first player to earn enough points to cross the finish line will have won game.

The questions will be presented along with four alternatives and they will be answered by pressing a button on the remote control. When a player finishes his/her turn the remote will be passed to the next player who answers the same question. The questions are maintained in a database.

1.2.2. Feedme

Feedme is a news application where the user can read the latest news from several categories on the tv. The news will both be presented in a mixed feed from all categories as well as a separate feed for each category. The articles will be in a short format, which means that they will have a maximum length of 170 words to increase readability.

1.2.3. Blob game

The blob game is a single player childrens game. The targeted group is young children, approximately 4 to 10 year olds. In short, the story of the game unfolds in the blob universe which has been cursed by the angry and evil slobwizard Mad Zloby. All blobs in the universe has been turned into angry slobs. All blobs except from one: Bloba. Bloba is the main character who the user plays the game as.

The game is a single player game which is played on a TV-screen with help of Zenteriors STB. The aim for the app is to get it to work as a "babysitter". That is, the parents should be able to leave their kids for a moment, while the children are entertaining themselves.

The targeted user will get an intuition of the slob/blob addition and therefore the game is partly considered as educational but most as a fun time consuming game. The goal of the game is to convert Mad Zloby to a happy blob, which will be done in the last level.

1.3. Definitions, acronyms and abbreviations

Term	*Definition*
User	Someone who is interacting with the application
UI	User interface
STB	Set-Top-Box
MB	Mega Byte

1.4. References

Sandahl, K. (den 03 09 2014). Requirements Engineering. Linköping, Östergötland, Sverige.

Software Engineering Standards Committee of the IEEE Computer Society. (den 25 06 1998). IEEE Recommended Practice 830-1998 for Software Requirements Specifications. New York, NY, USA.

1.5. Overview

This document contains an overall description of each application and their specific requirements. It is organized by describing one application at the time in each area.

2. Overall description

2.1. Sprint

2.1.1. Product perspective

The application will need a UI that communicates with the user and prompts the user to provide valid input into the system. The UI will then communicate with the back end of the system where the logic is stored where the inputs will be processed and appropriate action takes place.

Since the game is about answering questions, it will need somewhere to store the data. Therefore, a database will be used. The system will access an XML-file to fetch data for the questions and the UI then will present to the user on the TV-screen. However, the system will not be able to create or modify any data in the XML-file. Therefore it's a one-way communication application that only receives information.

2.1.2. Product functions

The application will have a start screen where the user may chose to configure settings such as categories for the questions, game modes, number of players and the length of a game. Once the user is satisfied with the configurations, he/she may press the start button to load the game.

In the game all players will be presented with a question and once the first player has selected an answer he/she will be notified to pass the remote to the next player who answers the same question. This will go on until all players have answered. Once all players have answered the question, the correct answer will be presented and the players that answered with the right alternative will receive one point. This marks the end of a round and the system will keep track of all player scores and then start a new round with a new question.

Once one of the players have scored enough points to reach the finish line the system will announce that the player has won and the game is over.

2.1.3. User Characteristics

This game is supposed to be played with your family or a group of friends. Therefore, the target audience range from 10 year olds without much education up to 80 year old professors. The players should not need any technical expertise since the game is that supposed to be intuitive and easy to use for all ages.

2.1.4. Constraints, Assumptions and dependencies

The application is constrained by the tv-box operating system and the navigation is constrained to the Zenterio STB remote control. The application is dependent of displaying text through the user interface.The application is also highly dependent upon communication with a XML-file in order to

retrieve information. One assumption about the application is that it will be displayed on televisions that can handle resolutions up to 720p and have the dimension format of 16:9 or 4:3.

2.2. Feedme

2.2.1. Product perspective

This is a one-way communication application that will receive information from external sources. The application will use an internal server to fetch the RSS-feeds and corresponding pictures.

2.2.2. Product functions

With this application the user will be able to read the latest news directly on the TV. The news will be retrieved from our server in the form of RSS-feeds. These feeds are then categorized and displayed in the application. The news will be listed as headlines in an assigned category and is selectable by the user. When a news headline is selected the source article will be displayed in a new window for the user to read. The system will also provide a function for including advertising targeted at specific categories.

2.2.3. User Characteristics

The target group for this application is people who like to keep up to date with the latest news. It is both the generation of text TV-users and younger people who would like to read the news on the television as a complement to their smartphones. The users need to be able to read and understand English. No technical background skills or knowledge are needed to use this application since it is supposed to be intuitive and easy to use.

2.2.4. Constraints, Assumptions and dependencies

The application is constrained by the TV-box operating system and the navigation is constrained to a STB remote control from Zenterio. The application is deeply dependent of displaying text to the user interface. However, this is not possible on the STB, which is solved by converting the text into images. The application uses the IP-support to fetch the RSS-feeds with corresponding pictures and articles on our server. An assumption about the application is that it will be displayed on televisions that can handle the resolutions up to 720p and have the dimension format of 16:9 or 4:3.

2.3. Blob game

2.3.1. Product perspective

The application will need a UI that communicates with the user and prompts the user to provide valid input into the system. The UI will then communicate with the game engine of the system where the logic is and where the inputs will be processed and appropriate action takes place. The application is used on the STB and a TV-screen.

The game is self contained with no need for external communication.

2.3.2. Product functions

The game is a single player game with 4 levels with similar characteristics. The gameplay is in an environment where the player moves around on the screen with the character Bloba, who has a number on his body. Enemies (slobs) will spawn, appearing from different directions on the screens with numbers of their bodys. The players objective is
to convert these enemies which is done by colliding with them. The player should only collide with enemies which has equal or smaller numbers on their body, otherwise the number on the player will decrease, vice versa, a successful collision will result in an increase of the players number.

There are different difficulties in the different levels and this is managed through the spawning of slobs with different levels, characteristics and spawning frequency. There are 4 different kinds of enemies which have different colors, moving patterns and speed. In addition to that the also have different “levels” or “sizes” i.e numbers on their body. The level is finished when the player has reached a certain number on his body. The 4th level which is the boss level also have the same characteristics as the earlier 3 except for the enemy Mad Zloby which appears in this one. After the conversion of Mad Zloby the game is finished. The user can customize their avatar which they will use in the game. After finishing each level the player will get a score in stars, one , two or three. When finishing the game the accumulated amount of stars can be viewed in the score.

2.3.3. User Characteristics

This is a childrens game and the targeted group is 4-10 year olds. The youngest of these may not know math that well but the game uses wasy colors, shapes and numbers to assure that this group understand the game dynamics. The colors and size of the enemies will represent their characteristics and therefore their possible actions and movement will be predictable even for the youngest players. The older of the interval is supposed to not have any problems in understanding the game due to their preschool, early school education due to their understanding of numbers and math. As earlier mentioned the parents of the user will be able to use this game as a babysitter i.e. an activity to keep their child entertained for a while without having to help their children to understand the game.

2.3.4. Constraints, Assumptions and dependencies

The application is constrained by the tv-box operating system and the navigation is constrained to the STB-remote control. One assumption about the application is that it will be displayed on televisions that can handle resolutions up to 720p and have the dimension format of 16:9 or 4:3.

3. Specific requirements

3.1. Quiz game

3.1.1. Functional requirements

* The system will present the players with a question with four alternatives at the start of the game
* The system will indicate whose turn it is to answer a question
* The system shall inform the user that he/she may answer a question with one of the four alternatives by pressing corresponding color button on the remote
* The system must register the answer of a player to able to correct it later on
* The system will inform the player that he/she should pass the remote so that the next player can answer the question
* When all the players have answered, the system will check the answers to see which player answered correctly
* The system will show the correct answer when a round has finished
* The system shall reward each player with a correct answer with a point and show it on the board
* When a round have finished, the system will start a new round with new question
* The system will keep track of all the players scores throughout the game
* When a player reaches the previously specified amount of points, the system will inform the users that a player has won the game by displaying it on the screen
* If two or more players reaches the goal at the same time, the system will inform the users that those player have won by displaying it on the screen
* The players should be able to keep playing until one or more players have finished first, second and third or until there's only one player left.
* The user will be able to change the game mode on the "Game Modes" page by using the arrows on the remote control
* The user will be able to change the categories of questions in the "Categories" page
* The user will be able to get from the start page to the categories page by pressing the "Categories" button
* On the categories page the user must be able to toggle a category between selected and unselected by marking it and pressing the "OK" button on the remote
* The user will be able to select number of players by pressing the "Number of Players" row by using the arrows on the remote control
* The user will be able to select total correct answers needed to win the game by selecting the "Points to Win" row by using the arrows on the remote control
* The user must be able to navigate in the system by using the arrow keys of the remote

*. The system shall inform the user of current settings that will be used in the game
* The user must be able to start a new game from the start menu by pressing the green button on the remote.
* It must be clear when the game has ended
* The user must be able to play different game modes with different characteristics
* When playing the game the user shall understand what the difference is between the game modes

3.1.2 Non functional (Performance) requirements

* The response time for user input must not be longer than 0,5 seconds
* The response time for retrieving questions for the game must not be longer than 1 second
* The system should not respond to wrong input

3.1.3 Design constraints

* The system size shall not exceed 1 MB
* The system shall be implemented in LuA
* The questions shall be stored in an XML file
* The application shall be playable on a STB from Zenterio.
* The game shall be testable using Jenkins

3.1.4 Software system attributes

* The system should be able to print text on the TV screen

3.2. Feedme

3.2.1. Functional requirements

* The user shall be able to read news articles on a TV
* The system shall be able to retrieve articles using RSS
* A user shall be able to see the headlines of all articles in the feed
* A user shall be able to choose a headline and read more about it in a separate article view
* A user shall be able to navigate with the remote
* A user shall be able to navigate between the different articles and categories
* A user shall be able to see where he/she is navigating
* A user shall be able to see the whole article in a separate window.
* The system must be able to retrieve the whole article connected to the headline
* The system shall be able to retrieve articles from different categories
* The user shall be able to have a separate feed for each category
* The system shall be able to filter the news based on category
* A user shall be able to see all the recent news in one feed
* The system shall be able to sort articles by most recent news

from all feeds.

* The system must be able to contain a varying number of articles in each category
* The user must be able to see all the news in each category
* An article shall not be longer than 170 words to increase readability
* A user shall be able to see which category an article belongs to
* The system shall be able to import pictures from an article
* The user shall be able to see related pictures in the article-view
*. The application must have ads visible for the user in the article view
* The ads shall not be a disturbance for the user reading the article
* A user shall be able to navigate from the different feeds by pressing one specific button on the remote
* A user shall be able to see the controller setting
* The system shall have shortcut button for accessing each of the 9 articles on the page.

3.2.2 Non functional (Performance) requirements

* The response time for user input must be below 0,5 seconds

3.2.3 Design constraints

* The system size shall not exceed 1 MB
* The system shall be implemented in LuA
* The application shall be playable on a STB from Zenterio.
* The application shall be testable using Jenkins.

3.2.4 Other requirements

* The navigation of the system shall be intuitive and self explanatory

3.3. Blob game

3.3.1 Functional requirements

* The user shall be able to move vertically and horizontally in the game
* The user choses direction, using the arrows on the STB-controller, which the blob then continues on until the user changes the direction or stops the blob by pressing OK
* The user is restricted to move in the game borders i.e the “borders” of the screen
* The blob has a size, which beside geometric size, is represented by an integer on his body
* The blobs size represents how much life it has
* When the blob (user) collides with a slob (enemy) an event shall occur depending on the size of the blob and the slob. These are the possible scenarios:

1. If blobsize>=slobsize the blob shall consume the slob and add to its size
2. If blobsize<slobsize the blob shall lose size corresponding to the difference in size of the slob it collided with

* When all lives/size of the blob is consumed the user will see a “game over” screen and have to replay the level
* The size of the blob resets in the beginning of each new level to one
* There are four different types of slobs red, purple, green and Mad Zloby
* The red slobs moves horizontally, from right to left with a “low” speed
* The purple slob moves vertically from the top of the screen and down
* The green slob have higher speed and moves horizontally and vertically with the pattern of a sinus curve
* There shall be 4 levels in the game
* In level 1 only red slobs spawn
* In level 2 red and purple slobs spawn
* In level 3 red, purple and green slobs spawn
* In level 4 (boss level) red, purple, green and finally one Mad Zloby spawns
* Mad Zloby (the boss) spawns as a size 9 slob in the beginning of level 4
* The user have to collide with Mad Zloby several times before he is defeated
* The sizes of the spawning slobs shall be relative to the blob
* The user shall be able to customize their in game avatar
* In each level there is a specific size that shall be reached to finish the level which is 9
* For every level the player shall receive a certain amount of stars from 1 to 3 depending on how many unsuccessful collisions the player made during the level.
* The user shall be able to see a tutorial where the functionalities of the gameplay is explained
* If the user performs zero unsuccessful collisions, the user receives 3 stars, one unsuccessful collision 2 stars, two unsuccessful 1 star otherwise the user get 0 stars
* After finishing the game the user will be shown a ending picture to finish up the story
* After finishing the game the player will be shown the total accumulated number of stars received during the game .

3.3.2 Non functional (Performance) requirements

* The response time for user input must not be longer than 0.1 seconds
* The update function shall not take more than maximum 0,05 seconds

3.3.3 Design constraints

* The application shall be playable on a STB from Zenterio.
* The game shall be developed using LUA.
* The game shall be testable using Jenkins.

3.3.4 Other requirements

* The design shall not in any way depict violence.
* The design shall be space-oriented and the appeal to the core user group shall always be in mind during development.

* The usage of the system should be intuitive and explanations of the gameplay shall be kept to a minimum.
* The progress of the game shall be apparent to the user.
* The user shall get better at logical thinking, from playing the game.
* The application shall be well documented and the code shall be easily understandable.
* The game shall start with telling a backstory to introduce the concept behind the game.
* Navigation in the game as well as how to start or end a game shall be easily understandable.