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HASAN KALYONCU UNIVERSITY

GAME BASED FIRST AID TRAINING

SOFTWARE REQUIREMENTS SPECIFICATION REPORT

Sedef KADİFECİ

Hacı Mustafa DEMİR

Yusuf ÖZTÜRK

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CHAPTER 1

1. SOFTWARE REQUIREMENTS SPECIFICATION

1.1 Introduction

In this SRS part, we will explain technical details about game based first aid training projects considering, necessary platforms we will use, user requirements and system requirements.

1.1.1 Purpose

Game Based First Aid Training Application allows people to be conscious and learn about first aid and know how to apply first aid interventions on necessary situations. Also, Game Based First Aid Training Application aim to decrease of deaths such as traffic accident result, work accident result. It presents an application that we can see to be conscious or not about first aid and it aims us to be more conscious thanks to this application.

1.1.2 Intended Audience and Reading Suggestions

This document can be used by users of play the video games who aim to see this project as a real-life application by reading the general scope of the application, which will be explained in detail in the remainder. Kids, adults, teenagers, health workers can include to this application's target audience. Developers interested in the platform (Unity-Visual Studio) will refer to the general idea and flow of the architectural design of the project. The person responsible for managing this project development process will refer to this document to manage each of this team.

1.1.3 Product Scope

The aim of the project as stated above, to ensure that users are informed and the awareness about first aid. We aim to benefit the viewers, and users interested in the scope of this business to achieve a better understanding of the project. Users will apply commands we applied seen on the screen on injure with different scenario such as traffic accident, or work accident. These commands are some transactions that necessary did during the first aid intervention. When the player executes the commands on the screen, will interferes with the injured, and result of this will can see what transactions are correct and not, and so will can learn correct first aid interventions. This application will benefit to a lot of people such as health workers, first aid workers about correct and fast first aid.

1.1.4 References

Some of the terms, utilities, platforms, programming languages, technological devices, hardware and software we use to develop the application are presented below.

I. What is Unity?

Unity is a cross-platform game engine. It was developed by technologies of Unity. We can use Unity to develop video games and websites for technologic devices such as consoles, PC, or mobile devices. We can use Unity to create 3- dimensional (3D), 2- dimensional (2D), virtual reality (VR), and augmented reality (AR) games. We can also use some programming languages to develop 3D, 2D games on Unity platform. One of these programming languages is C# programming languages. We can develop projects with Unity and Visual studio Code platform while coding C#.

II. What is C#?

C# is an object oriented programming language. It is simple, flexible, and open source. We can use C# to write software programs. We can write C# in Visual Studio. We can write C# for projects we develop by asp.net and we can create web sites application. We can also write C# code in Visual Studio for games we did in Unity Game Engine.

- **What is C# used for?**

Actually we can use C# in all of products of Microsoft because C# was developed by Microsoft. Basically, we use C# to develop desktop application. Because of the C# is a part of .NET, we can use together with ASP in wen applications and web development.

III. What is 3D Gaming?

3D gaming is interactive computer enjoyment this is graphically presented inside the three dimensions of height, width and intensity.

A 3D video game (three-dimensional video game) may refer to:

- a video game featuring 3D game graphics, which are computed in three directional dimensions
- a stereoscopic online – video game with a stereoscopic depth effect

IV. What is the Unity Asset and Unity Asset Store?

An asset is representation of any object that may be used in your game or project. An asset may additionally come from a document created outdoor of Unity, which includes a 3D model, an audio report, an image, or any of the other varieties of record that Unity supports.

The Unity Asset Store is domestic to a developing library of unfastened and commercial property created both with the aid of Unity Technologies and also participants of the Community. The property are accessed from an easy interface built into the Unity Editor and are downloaded and imported directly into your project.

1.2 The Overall Description

This section will describe the general factors that affect the application and its requirements and provide a training process on first aid. The process of learning the right things about first aid training and first aid interventions will be observed with this educational game.

1.2.1 Product Perspective

For the users who will use this application, we can compare it with the applications mentioned in the similar applications section. We may examine first aid training mobile apps, virtual reality first aid courses, first aid programs, or articles about first aid.

We can compare this application with the “First Aid by American Red Cross” mobile application which was made. This is an educational and informative first aid application. This application developed for teaching how to save human life with first aid interventions.

This application provide a mobile app based software to make people aware of first aid and improve quality of first aid training. This program easily increase awareness and abilities about first aid training for child, adults, and health workers.

The difference between the "First Aid by American Red Cross" application and our application is that our application is a game based application. While our game application aims to educate people by playing game about first aid training, "First Aid by American Red Cross" application aims to educate and give information people about first aid and its interventions with a mobile application that will be used on mobile devices.

1.2.1.1 System Interfaces

In this Game Based First Aid Training application software, there is a dependency with some feedback to test and demonstrate that the user has increased knowledge about first aid and improved first aid intervention. With these feedbacks, we will be able to compare and observe the success and develops of between people who use this application and who not use.

1.2.1.2 User Interfaces

In this section, we will talk about all the interfaces that affect Game Based First Aid Training application. We will give more details as the project progresses.

1.2.1.3 Hardware Interfaces

To develop this application, developers will need some equipment. These are gaming keyboards, gaming mice, gaming headsets, and gaming monitors or gaming laptops. Also these equipment will be necessary for users too.

1.2.1.4 Software Interfaces

Game Based First Aid Training project will have consisted of two basic parts, 3D side and server-side so that there will be some software interfaces or tools that used to develop the systems that the project needs. To create this project, we will use Unity Game Engine Platform and some assets in Unity Asset Store. This tool provides convenience and clarity in order to improve code quality for 3D and game based applications and improves efficiency at all. In backend side, there will be some components that help to make application program interface such as Visual Studio Code.

We are going to use VS Code with the most reliable version, the tool provides the developers to write script language codes efficient way, means with several extensions. We will use GitHub system or Unity Cloud for connecting our works. We will use C# programming language on VS Code for software of project.

1.2.1.5 Communications Interfaces

In this Game Based First Aid Training application, the system will have two backgrounds: software-side (VS code) and game-side (Unity). For sure, there will be some communication interfaces, protocols that enable the system to interact with all subsystems in a concurrent way. The software-side will have consisted of Visual Studio - C# programming languages that uses entire code methods in order to communicate through game-side and software-side.

1.2.1.6 Memory

As a priority, Steam users must have the Steam account to download the application. In addition, to use the application in a healthy way, the user must have enough RAM for application. On devices with lower RAM, the application will be difficult to use. Because there are not enough conditions in practice, contraction and strain will occur when the RAM will be insufficient.

1.2.1.7 Operations

In this Game Based First Aid Training application, basicall**y,** there will be some scenarios that needed first aid intervention and the user can choose from these scenarios. As user progress in this scenario that he/she selected, when any situation that first aid intervention needed user will be able to select one of all alternative recovery method for the wounded and will be able to apply. If the user follow right transactions, he/she will be successful and will able to follow the application with other scenarios.

1.2.1.8 Site Adaption Requirements

In this Game Based First Aid Training application, there will be no site adaptation requirements at all since the Unity Game Engine platform, tracking system and controller and Visual Studio platform will handle all the entire requirements about adaptation.

1.2.2 Product Functions

This application will be enable to learn and do first aid perfectly. We aim to prepare the application in this way so that it is easy to learn.

1.2.2.1 Initial Application – Login Part

First of all user must make a test to know first aid knowledge level. We use this data to compare between this and end of the program test data.

1.2.2.2 Selecting Scenario

In this part, user is going to select a first aid scenario for practice what user have learned. Each scenarios will have different difficulty levels.

1.2.2.3 App Tasking

User make some tasks to complete selected scenario. Important thing is sorting the tasks in this part. For example wounded should be check before making other tasks.

1.2.2.4 Data Comparison

In end of the program, user's experience is checked. With this compares, we purpose find answers for some questions such as;

- **Could the user learn to apply first aid?**
- **Could the user learn fast and truthfully?**

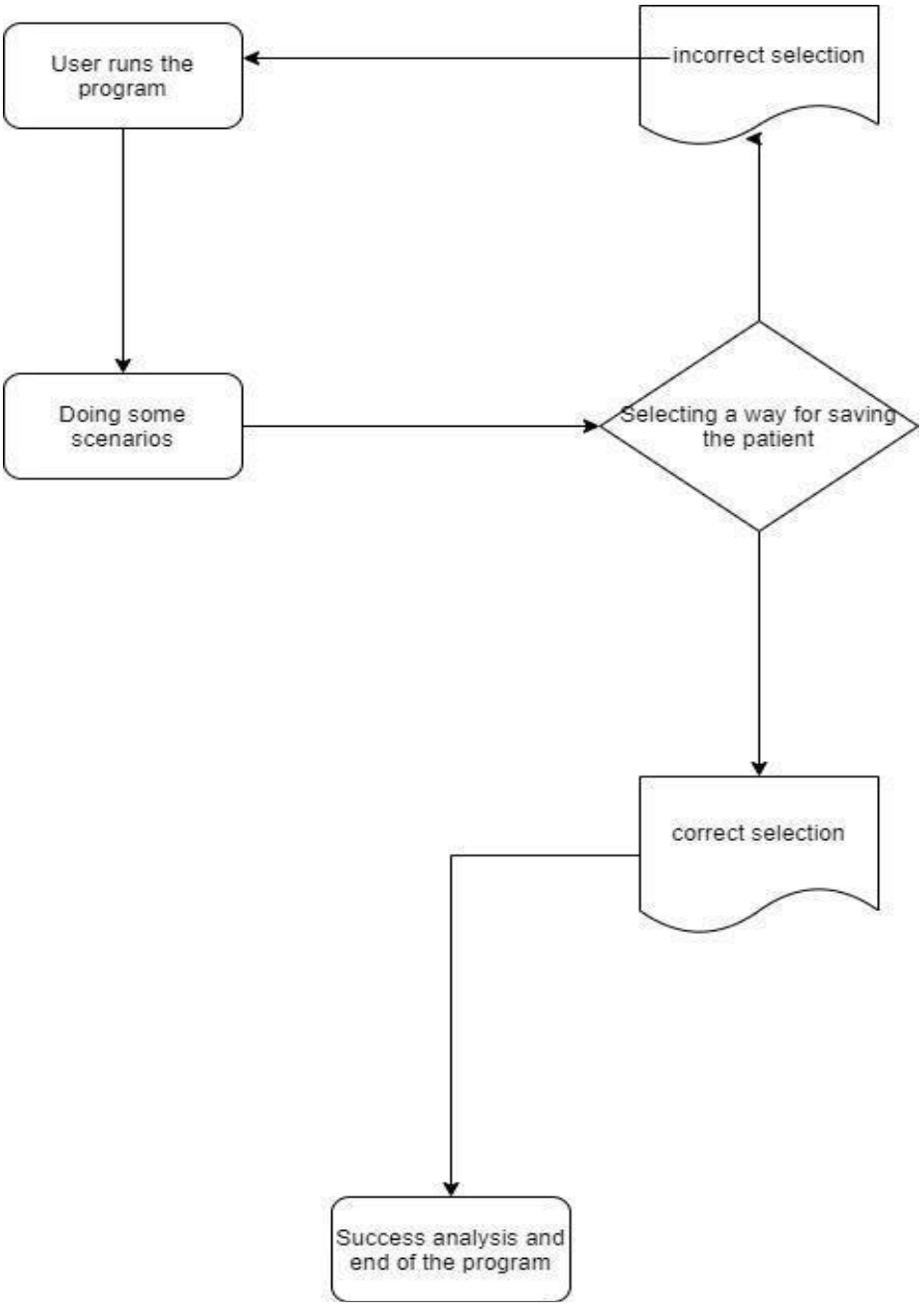

Figure 1 - General Working of Project 1

A basic diagram of game based first aid training implementation shown above.

1.2.3 User Characteristics

Application users, and users will benefit from the mobility and being 3D of this application while using the application and playing the game. With which scenario the game will be played, the selectable things will depend on the user's decision. I mean, while playing the game, user will can choose any scenario that he or she wants to play and can follow with this scenario in rest of the game. User will can select any command or transaction of first aid that offered by the game and can advance the game according to the selection of his choice. The user can use the application at any time. Use of the application is mostly dependent on the user.

The commands selected by users during the game plays a very important role for the flow of the game and for the users to benefit from the application. Every command or transaction that the user select will provide the user information and idea about first aid. The user must select the command correctly and apply correctly ordered for the first aid interventions results performed by the user to be provided correctly. Because all the consequences of the applied first aid transactions depends on the user's selection. Thanks to this selections and steps user will learn what must to do for injured people in the event of any accident.

The processing of first aid commands selected by the user, will be implemented by the game system we have developed. Since the application depends entirely on the selection of the user, the more accurate the user chooses, the better the result.

If the user starts to use the application, and then the missing selection or incorrect selection are entered, the user will get a result accordingly. Thanks to this application, user learn more correct things with related to first aid intervention.

1.2.4 Constraints

- Application is a game based app that users will play. It is developed on Unity Platform. Users with Steam will be able to download the app from Steam.

- Another requirement after starting to play the game is to follow the game flow. It is an important stage for player observation and each users will have the scenario their own selection during the game. Without selecting a scenario, users will not be able to continuo the game.

- After selecting a scenario for the game, they should follow the situations that was in the game. When an accident, they should follow the necessary steps and correct transactions for the first aid interventions for helping the injured person. They will and be able to see and select commands that presented by the game on the screen during the accident.

- If they select the correct commands, they will be successful and they will continue the game, but if they will not select the correct commands, they will be unsuccessful and will not be to help to injured person.

- The correct and complete selection of commands and the player is fast during the game is also an important stages. If the user wants to obtain an accurate and healthy result from his / her transactions, he/she must select the commands accurately and rapidly.

- The feedbacks that will be displayed as a result will come out entirely from the commands selected by the player. The application will not select any command to itself and make transactions.

1.2.5 Assumptions and Dependencies

In this subsection, we will list and explain each of the factors that affect the requirements and stated for the application in the SRS.

In the game based first aid training application system, there is particular things that will preferable by the users and that might affect and constraint the application.

The game based system will develop in the Unity platform as we said subsection that before. The changes on Unity platform might affect the application and entire SRS in terms of application design. Therefore, we will work to develop the application in accordance with the Unity platform features. There will be changes and innovation in application design when necessary so, we will be able to create game design, different scenarios, or situations according to ourselves idea.

There is one more constraint. This is store that we will upload application. We will upload the application to Steam instead of Google Play or Apple Store.

Some individual and user requirements may affect some other constraints and application design, so that this report might be needed to be changed over time in the case of user requirements and design of application have been changed in a crucial way.

Scheduling accuracy is one of the other constraints that might need to be considered in terms of the priority of some core features. Some feature works might be added into SRS. For instance, in the game based application system, there will be some feature works related to create scenario that is depending on people, animations and 3D objects that might be added into the entire project. But this constraint might affect the whole SRS, so that the aim of the project might be defined with some other terms, not as an only tracking system.

Human resource availability is another dependency that might affect the entire SRS documentation. This metric is the one the most crucial constraints that might affect project scheduling directly. The overall system design and the SRS might be needed to be covered once again to supply concurrency for all platforms that project supports and for some security issues as well.

1.2.6 Apportioning of Requirements

In this first aid game process, there will be some add different scenario and game features for future work considering game flow and the contents of game features that have to be implemented in the game application. This scenario added might be think into a different animation from traffic accident such as work accident.

There will be some platforms that can serve users to reach the first aid game such as Steam. As we mentioned above, the project has limited time and there are some core features that have to be done in defined deadlines. This state is important to increase number of users that uses the first aid game in several platforms.

1.3 Specific Requirements

1.3.1 Functional Requirements

1.3.1.1 Start Scene

In the start scene of this game, the user will choose the difficulty level and which game scenario he wants to play.

1.3.1.2 Play

When the game starts, the user will first see an accident scene of the person who needs first aid. The user will try to reduce the damage caused by the injured to zero or to the minimum with the most accurate first aid interventions to be done.

1.3.1.3 Movement

The user will examine the environment with the help of gaming equipment and go to the accident area with the controller and make the necessary interventions to the injured.

1.3.1.4 End of Game Success

If the user applies first aid interventions correctly enough, the success rate will be displayed on the screen along with the congratulations. If the interventions are not good enough, try again and exit buttons will appear. If the user chooses to try again, the same scenario will start over. It will return to the start screen with the exit button.

1.3.1.5 How to Play?

When user choose how to play button on menu screen, how to play scene shall be displayed. In the how to play scene, the user will learn how to play the game thanks to the instructions.

1.3.1.6 Exit

When user choose exit icon, game shall be closed.

1.3.2 Non – Functional Requirements

1.3.2.1 Performance Requirements

The game should work at least 360 FPS, so that the game will be fluent. Also, the game should not crash more than one per one hour playtime. Finally, loading phase of the game should not take more than 1 minute; in other words the game should start in 1 minute after the user opens it. In order to get this performance, a computer with a quality and latest technology of must be used.

1.3.2.2 Design Constraints

This section has four subsections which are security, usability, availability, maintainability and they are explained in detail on their own sections. Also, this section contain a brief information about the attributes of the software system by the terms of "good" software attributes.

I. Security

First Aid Game does not create profile for users, it does not need to access user credentials. Therefore, security is not a concern in this application.

II. Usability

The scope of the game is widespread. Anyone who has or has received first aid training (with physical competence to use gaming equipment) can play this game.

III. Availability

The application will be available unless it is removed from the Steam market.

IV. Maintainability

The system should be maintainable in order to add new features to the newer versions. Also, the game should work on newer versions of the related operation systems (the game should be updated then if necessary). Hence, all design aspects should be well documented and easily understandable