1. **Introduction**
   1. **Purpose of the System**

“Run Dot Run” is a game for entertainment which is mainly designed for kids and youth. It will consist of different levels. The levels will take short time, but will include some obstacles to pass and finish the game. The game will be easily understood, learned and used, while providing a user friendly UI.

* 1. **Design Goals**

1. **Design Goals for End User**

* **User-friendliness:**

“Run Dot Run” will be a game that can be played by anyone at any age. However, because it is a game, our target audience will be consisted of mainly kids and youth. Therefore one of our goals is to provide a simple, attractive and well-organized interface that our target audience can easily understand and use. We will put a few buttons having basic features, such as starting the game and setting the volume of the music on the background, to the panels to decrease the complexity of the interface. Also, we will arrange the places of the buttons according to their priorities. For example, “Play Game” button, which is assumed to be the mostly used button on the main menu, will be placed in the middle of the screen, so that it will be less tiring for the user to use the tools.

* **Ease of Learning:**

While playing games, people mostly don’t prefer to spend time on learning how to play the game. Also, when it is regarded that there will be kids in our target audience, we should decrease the difficulty of understanding the game as much as possible. Therefore, one of the important goals of this project is to provide a game which can be easily learned, understood and adapted by the users. Otherwise the game can lose some of its users. In this scope, in “How to Play” panel, there will be short and clear description about the game and the first level will be very basic and easy for the users to understand what is going on in the game in general.

* **Ease of Use:**

In a game, one of the possible disadvantages is the difficulty of controlling the game. Therefore, another important goal putting the end user at the core is ease of controlling the game. In “Run Dot Run”, there will be clearly understood buttons, some of which will have images on themselves to make their functions more understandable, and the game will be controlled by some basic keys, such as left and right keys to move the dot, whose functions are easily recognizable.

Design goals for end user basically focus on providing a good UX to the audience.

1. **Design Goals for Developer**

* **Readability:**

At the beginning of the project, we should consider that this game has more than one developers, and in the future there can be different developers working on this project. For a developer, the more the code is readable, the better and easier it is to work on it. Thus, creating a clear and readable API is one of our main goals regarding the maintainers.

* **Modifiability:**

In this game, there are different levels and different components for those levels. We assume that in the future developments, it is highly possible to need some changes in the components and functions depending on the feedback of users or desires of the client. Therefore, one of our aims is to make modifications easy and less dangerous for the whole code.

* **Reuse of Components [4]:**

For this project, we are more concerned about the reusability of the components inside the project, rather than in other projects. In different levels, we use different components and it is possible for the future levels that we will need to reuse them. That’s why, in our project, we are designing our classes and components in a way that they their dependencies will have possibly the least effect in the others reusability.

* **Adaptability:**

We want our program to be able to run in different machines as much as possible. Programs coded on Java can run on all CPU if Java interpreter exists. For this goal, we will use Java as our programming language, which is more portable than C and C++.

1. **Design Goals for Client:**

* **Flexibility [6]:**

Our project will be adaptable to new requirements. We will try to make it least complex to add new features and functions to our design. For example, if there is a desire for new kind of obstacle, we will be able to add the new obstacle object directly to the system by connecting it to the GameObject class.

**Trade-offs:**

* **Usability vs. Functionality:**

From the beginning to the end, we should assume that anyone at any age will play this game, because it is designed for entertainment of a wide target of audience. Therefore, regarding that our youngest user target will be kids, we should keep the game as simple, understandable and clear as possible. We don’t need a high functionality for this project. As we need to increase the usability, the functionality will be decreased.

* **Performance vs. Memory:**

In “Run Dot Run”, we believe the performance is prior than memory, considering that in a game visuality, speed, effects etc. are important for attraction of the end user. Therefore, we focused on the performance rather than the memory. In order to increase the performance, we stored the objects of the game in a linkedlist, which take space in the memory while reaching the object in a faster way.

* 1. **Definitions, acronyms and abbreviations**

UI [1]: User Interface

UX [2]: User Experience

API [3]: Application Programming Interface

CPU [5]: Central Processing Unit

GameObject class: the class where all of the objects included in the game are connected

* 1. **References**

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[4] <https://dzone.com/articles/reusable-components-in-java>

[5] <https://www.webopedia.com/TERM/C/CPU.html>

[6] <http://www.nada.kth.se/~karlm/prutt05/lectures/prutt05_lec7.pdf>