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Master of Science in INGEGNERIA INFORMATICA
(COMPUTER ENGINEERING)

Master's Thesis

Project and implementation of a
multifaceted score system for
online gaming



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Abstract

Nowadays, Gamification is a very effective technique used for any kind of business that seeks to maintain the interest and motivation of its members over time. Typically, this concept applies to business that looks for keeping customers nearly from the business even they don't have to. This technique can encourage people to use a system in a voluntary and fun way, in which they can experience it in a game-like environment. Unfortunately, the implementation of the game design processes is complex and are not integrated in the software development processes of the organizations.

This work proposes the enrichment of the actual MAK07 system thanks to the integration of the Gamification technique on software development methodologies and designing of point system and levels. Additionally, the classification of the input data by clusterization which is a data mining technique.

Nowadays everyone can develop mobile applications and sell or distribute it on a market like Play store for android or App store for iOS. At the time you create the product, you must know the type of customers target that the application wants to have. the most used are:

1. Buy and play it all: User buy the game on the market in order to get it.
2. Advertisement income: Games that accept adds that generate money every time a user play and visualize them.
3. F2P or free to play: Game played for free, payment of some booster or additional elements can be done with real money. [2][4]

1 Scope of the thesis

1.1.1. Context description

Mak07 is a game developed by Tonic Minds s.r.l. This game allows to the user to Combine the 7 numbers of a scheme using the four basic operations (addition, multiplication, subtraction and division) in order to get 0 as the final result. The idea with this thesis is to design a solution using elements of gamification a new version of MAK07 taking in count previous constraints and necessities of the client and game in order to increase downloads and generate incomes.

1.1.2. Actual achievements of MAK07

In v1 of MAK07 the user was allowed to play and know the score done by each schema, In v2 of MAK07 the score was keep by the system, v3 of MAK07 was develop the challenge mode game in which the user is allow to challenge another player to solve as

much schemas as possible in certain time. v4 of MAK07 was develop the chat. On v5 of MAK07 was develop the tournaments.

1.1.3. Actual drawbacks of MAK07

Mak07 has 43 users on play store and App Store is 500 which is not too much and also the application is free and has any mobile gaming business model in order to earn money. The points system is poor and the input combination and permutation of numbers are not classified in a way to classified them as easy medium or hard to play.

MAK07 is classified as a math game and not many users have interest of this kind of games compared to adventure or strategy games.

1.1.4. Problem to solve

How to improve the number of downloads and generate some income with gamification in a multifaceted score system for online gaming?

1.1.5. Justification

As many mobile applications in the world, the number of downloads, rating and feedback are important to improve and somehow earn money. [6] [11]

the objectives are:

1. Incorporate elements of gamification into MAK07 taking in count the already developed system
2. Improve the point system of MAK07
3. Establish the Level system of MAK07
4. Classify the input combination and permutation numbers of MAK07 in order to assign schema according with the level of difficulty and level of the player.
5. Improve the number of downloads of MAK07.

1.1.6. Impact expected

MAK07 users will download and play voluntary, fun and in a continue way.

All kinds of players will play and discover elements of gamification that supply their interest.

The documentation of MAK07 about analysis and design will be complete and it can remain as a reference material and as a deliverable for the client

Conclusion

3 main topics were covered with this thesis. the first one was the point system of MAK07 that was the door which opens the design of gamification components cross over the full system which was done with test and simulations of different formulas according to the normal behavior of users of MAK07. The second one was the classification of inputs that allows the design of levels of MAK07 and the definitions of requirements for each level. This classification was done thanks to applying a technique of clusterization of the input data finding groups of similar characteristics. The third one was the design and test simulation of a progressive game using an increasing combination of numbers in order to make the game difficulty more progressive.

The design of gamification on MAK07 from a high level point of view was enriched by documenting several use cases, list of requirements, user interfaces and definition of the components.

The gamification components designed in this thesis will be integrated in the main game and deploy on the store as soon as possible. As the theory of gamification says about feedback loop, the game will be constantly monitored in order to understand the new motivations and to manage feedbacks of users.

Levels can be increased over the time as well in solo game the stops on the path can be added in order to give more challenges to MAK07 users.

From the architectural point of view, the structure of MAK07 gives the possibility to scale in horizontal way thanks to the technologies of MongoDB and Docker.

[2] Mobile Gaming Trends and Revenue Models, Khaled Mohammad Alomari¹⁽⁾ , Tariq Rahim Soomro² , and Khaled Shaalan³, Â© Springer International Publishing Switzerland 2016 H. Fujita et al. (Eds.): IEA/AIE 2016, LNAI 9799, pp. 671â683, 2016. DOI: 10.1007/978-3-319-42007-3-58

[4] <https://www.theseus.fi/bitstream/handle/10024/134405/GoncharovaElizaveta.pdf?sequence=1&isAllowed=y>

[6] <https://gameanalytics.com/blog/popular-mobile-game-ad-formats.html>

[11] <http://mediakix.com/2018/06/how-do-mobile-games-make-money/gsoUoPF7oU>