IMPLEMENTATION OF DATA-ANALYSIS

VIRPA Palomestari

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INTRODUCTION

According to the national Target Programme for the Prevention of Home and Leisure injuries, fire safety should be taught to children and young people by means of regularly repeated training in different learning environments. [1]

A TUAS project group created an educational game about fire safety practices called VIRPA: Fire Expert which targets younger audiences. In the game the player has a character that they control in a virtual school premise. The game features questionnaires, scanning signs, mini-games and item collecting and the goal is to equip the younger generation with the proper knowledge on fire safety and how to act accordingly in fire hazardous situations.

The developers of VIRPA wanted a better understanding about the effects of the game and the general behavior of their users, which in return will help the developers further prove the learning benefits of the game.

OBJECTIVES

- Analyze data gathered from the game
- Automated queries for analysis purposes.
- Gather supportive information for additional funding for the project.
- Using data to determine how well the game has educated its players on fire safety.
- Create analysis to better understand the users behavior.
- Create a browser extension to display found analysis.
- Write documents explaining queries, charts, methods and findings.

METHODOLOGY AND TOOLS

At the start of the project the team determined roles that fit each of the group members' skills and characteristics. Two weekly meetings were held with the whole team attending in order to discuss and present what each member had done for the project and how the team should continue. Planning was done to decide how to conduct our analysis, how to visualize the data, and which tools the team would use moving forward.

A couple team members wrote planning documents to further flesh out our objectives and goals. The team used MSSQL Server Management Studio to execute SQL queries to the game's database. A node application was also programmed from which we can run live queries from the database. Excel was also used to support the analysis.

ANALYSIS FINDINGS

*Based on 1076 users

- Users who logged in 1 or more days after registering: 49,26%

- Number of users that used scanning : 42,84%

- Users who scanned 2 or more signs: 40,43% or 94,36% of users that used scanning

- Users who collected items: 61,34%

- Users who answered:
  - Pre-knowledge questionnaires: 25,18%
  - Post-knowledge questionnaires: 4,09%

- Users who played minigames: 51,39%
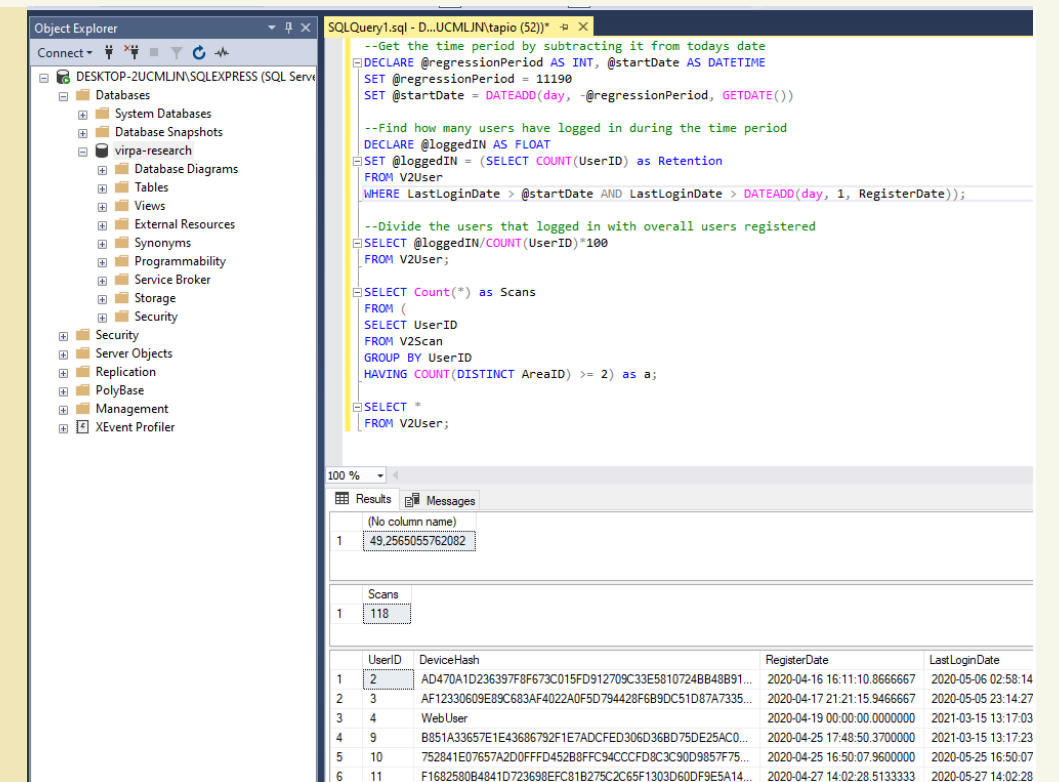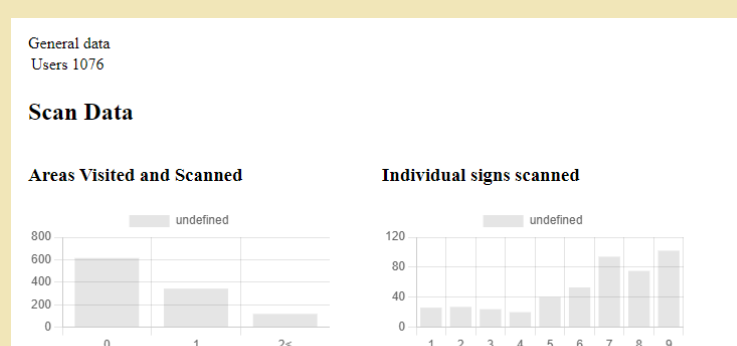
RESULTS

The team was able to gather information about the general behavior of users. Additionally the team calculated user-specific learning rates, amount of scans, areas visited and retention rate. A user survey was filled with the information to get a better understanding of the participants. A browser extension prototype containing charts of automated analysis was created.

The team was able to determine that roughly 1/4 of all users had answered to at least 1 pre-knowledge questionnaire and 16% of those users had proceeded to do the final exam. Due to having small amount of participants a conclusive learning benefit was not taken into consideration.

Scanning is a big part of the games teaching mechanics and a positive result found was that nearly all that had used the scanning mechanic had scanned 2 or more individual scans, giving users valuable exposure for fire-safety signs.

Based on the findings the team can make a conclusion that the players did the following things most(from most to least):

1. Collected items
2. Played mini-games
3. Scanned signs
4. Answered questionnaires

The team concluded that based on the amount of scans by users alone, the game is able to positively influence a users knowledge on fire-safety by exposing fire-safety signs to players, having a passive learning effect.

CONCLUSION

The team concluded that based on the amount of scans by users alone, the game is able to positively influence a users knowledge on fire-safety by exposing fire-safety signs to players, having a passive learning effect.

Related literature
U. Korpilahti, R. Koivula, P. Doupi, V. Jakoaho, Safely at All Ages: Programme for the Prevention of Home and Leisure Injuries (2021), 2021–2030. [1]