Insert here your thesis' task.

Czech Technical University in Prague
Faculty of Information Technology
Department of Software Engineering

Bachelor's thesis

Location-based Role Playing Game

Jakub Čech

Supervisor: Ing. Miroslav Balík, Ph.D.

28th February 2017

Acknowledgements

I would like to thank myself for doing this. I am an awesome and humble person. With great power comes great responsibility and no one else is as good or worthy as I am to be thanked. Ave Kuba!

Declaration

I hereby declare that the presented thesis is my own work and that I have cited all sources of information in accordance with the Guideline for adhering to ethical principles when elaborating an academic final thesis.

I acknowledge that my thesis is subject to the rights and obligations stipulated by the Act No. 121/2000 Coll., the Copyright Act, as amended, in particular that the Czech Technical University in Prague has the right to conclude a license agreement on the utilization of this thesis as school work under the provisions of Article 60(1) of the Act.

In Prague on 28th February 2017 ……

Czech Technical University in Prague
Faculty of Information Technology

Citation of this thesis

Čech, Jakub. *Location-based Role Playing Game*. Bachelor's thesis. Czech Technical University in Prague, Faculty of Information Technology, 2017.

Abstrakt

Hvězdy jsou krásné, protože je na nich květina, kterou není vidět. Poušť je krásná právě tím, že někde skrývá studnu. Ať je to dům, hvězdy nebo poušť, to, co je dělá krásnými, je neviditelné!

Klíčová slova #deep, #thoughtoftheday, #follow4follow

Abstract

Place the 2 cups of crushed ice into a cocktail shaker. Pour the rum, lime juice, and simple syrup over the ice, cover, and shake well. Remove the ice from your serving glass and strain the drink into it. Serve immediately.

Keywords Daiquiri, Coctail, Rum, Cuba

Contents

List of Figures

Introduction

The world of mobile devices is quickly evolving. Smartphones and tablets are becoming more and more powerful and not only in terms of computational power and available memory. Mobile devices nowadays are packed with various sensors. It is possible to integrate data from GPS (Global Positioning System), accelerometer, gyroscope, magnetometer, and camera to quickly determine device's position and orientation. This opens us doors to augmented reality. In my bachelor thesis, I, in cooperation with Tomáš Zahálka, will create a mobile game for Android which will utilize elements of augmented reality. The game is set in a fantasy world and its genre is RPG (Role Playing Game).

Chapter 1

Project overview

1.1 Project timeline

1. **Analysis** – finished by the end of February
2. **Design** – finished by the end of March
3. **Implementation** – finished in the middle of May
4. **Testing** – begins with implementation and will be finished by the end of May
5. **Releases**
   a) **Pre-alpha** - 16. 4. 2017
   b) **Alpha** - 30. 4. 2017
   c) **Beta** - 14. 5. 2017
   d) **Final** - 1. 6. 2017

1.2 Specification and features

The content of this section is temporary.

1. Bare minimum
   - Zobrazení pohybu hráče po mapě
   - Generování monster
   - Generování budov
   - Interakce s herními objekty
   - Ukladaní postupu, stavu postavy

- Inventář
- Statistiky

2. Should be there
    - Mise, úkoly
    - Multiplayer
    - Skill systém
    - Dialogy
3. Nice to have
    - Navigace k objectives
    - Trading
    - Tutorial
    - Částečná offline podpora

Chapter 2

Analysis

2.1 Similar solutions

2.1.1 Parallel Kingdom - Age of Ascension

This game was on market for 8 years (2008-2016). Parallel Kingdom is a closest solution to ours.

"Parallel Kingdom is a mobile, location based, massively multiplayer game that uses GPS location and Google Maps to place users in a virtual world. Parallel Kingdom is the first location based RPG for the iOS and Android platforms. The game is set in a virtual world or "Parallel Kingdom" where users claim their territories based on their GPS location or by making friends who invite them to travel to new places. Parallel Kingdom is a freemium game and utilizes a virtual goods revenue model."

2.1.2 Ingress

Developed by Niantic, which was then part of Google, this game was released in 2013 for Android and in 2014 for iOS.[4] It is a location based, massively multiplayer game. A player have to choose one of the two factions, Enlightened or Resistance, and then as a part of his team capture regions of the game map. A faith of each faction relies on players' cooperation. Thanks to that players meet in real life and coordinate their actions.

Ingress was the first very successful augmented reality game with more than 10 000 000 installs.

2.1.3 Pokémon GO

After its success with Ingress, Niantic started working on a new game Pokemon GO. Once released, the game became incredible hit. Even though the game faced many problems during its launch, mainly caused by the unexpected

success and more active users than Pokémon GO was able to handle, in the first 80 days Pokémon GO reached about 550 million downloads and earned about $470 million.

The game is very similar to Ingress and uses the same crowd-sourced geographical data.

2.2 Use Cases

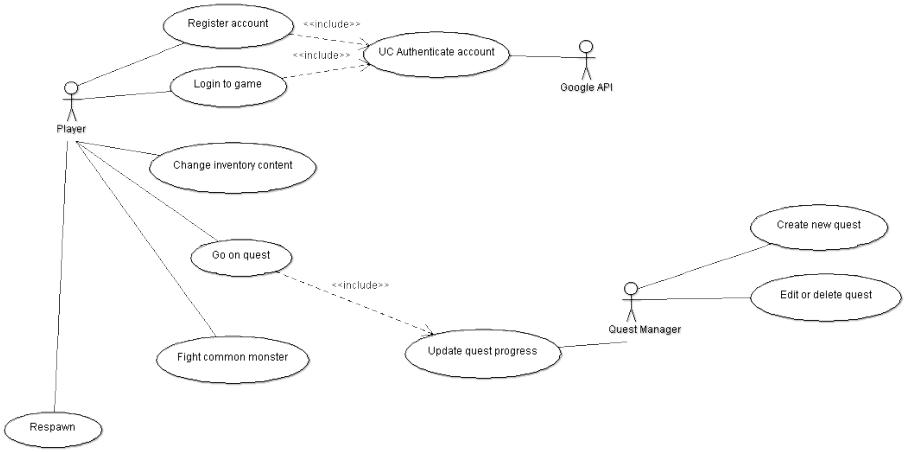

Figure 2.1: Use case diagram

2.3 Requirements

2.3.1 Functional

2.3.2 Non-functional

2.3.3 System and Interface

2.4 Technology

2.4.1 Frameworks

2.5 Use-cases

Chapter 3

Design

3.1 Server-Client communication

How the data are exchanged between client and server. Will contain format, technologies and protocol specification.

3.2 Security

Basic methods for verification of legitimacy of the data. How the server API will be secured.

3.3 Architecture

Diagrams and overall architecture of the server belongs here.

3.3.1 Logical view

3.3.2 Development view

3.3.3 Process view

3.3.4 Physical view

3.3.5 Scenarios

Chapter 4

Geo-data mining

Description of how the geographical data for the monsters and building will be obtained.

4.1 Methodology

4.2 Output

Chapter 5

Implementation

Implementation-specific aspects of the game. Will include a description interesting parts of the server.

Chapter 6

Deployment

How the server will be deployed and updated.

Chapter 7

Testing

Results

Appendix A

Acronyms

GUI Graphical user interface

XML Extensible markup language

Appendix B

Contents of enclosed CD

- `readme.txt` ..... the file with CD contents description
- `exe` ..... the directory with executables
- `src` ..... the directory of source codes
  - `wbdcm` ..... implementation sources
  - `thesis` ..... the directory of LaTeX source codes of the thesis
- `text` ..... the thesis text directory
  - `thesis.pdf` ..... the thesis text in PDF format
  - `thesis.ps` ..... the thesis text in PS format