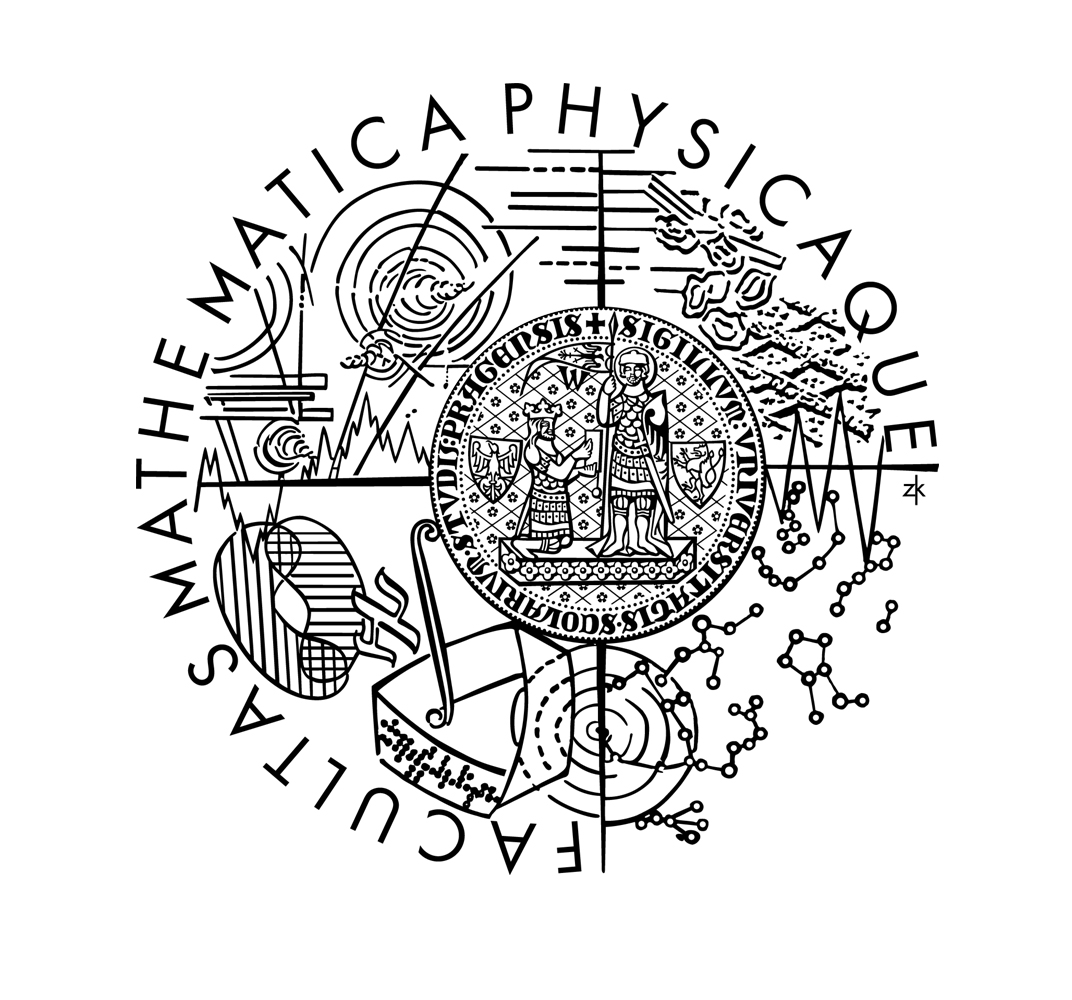
Charles University in Prague

Faculty of Mathematics and Physics

**BACHELOR THESIS**



Štěpán Havránek

**3D action game in a bizzare city**

Department of Theoretical Computer Science and Mathematical Logic

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Study programme: Computer Science (B1801)

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Název práce: 3D akční hra v podivném městě

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Contents

[Introduction 1](#_Toc355028198)

[1. The game 1](#_Toc355028199)

[1.1. Detail description and rules 1](#_Toc355028200)

[1.2. Similar games 3](#_Toc355028201)

[2. Implementation 3](#_Toc355028202)

[3. User documentation 3](#_Toc355028203)

[Bibliography 3](#_Toc355028204)

# Introduction

There are many of action games with 3D graphical visualisation made. Main reason for start using synthetized 3-dimensional space was to bring more realistic feeling from the game to the player. Nowadays developers and designers are trying to make better and better simulation of this world using 3D. Aim of this paper is different from these ideas. It deals with game situated in space which doesn’t follow basic physical laws of our world.

Let’s figure out a game that maybe looks like a classical 3D. But parts of game map are connected to each other as a generic graph. In this game you can go straight until you reach your first position. But you don’t come from the back of your original stand at all. For example you can come from the right or from any other direction. And this is the world of our game.

Player’s goal will be to occupy the entire city. He must go to all of its quarters and capture it one by one. His enemy has exactly the same objective. Because of that, both of them have leave captured quarters guarded by their friends. The one, who first orients in the map and gets all parts of map in his property, wins

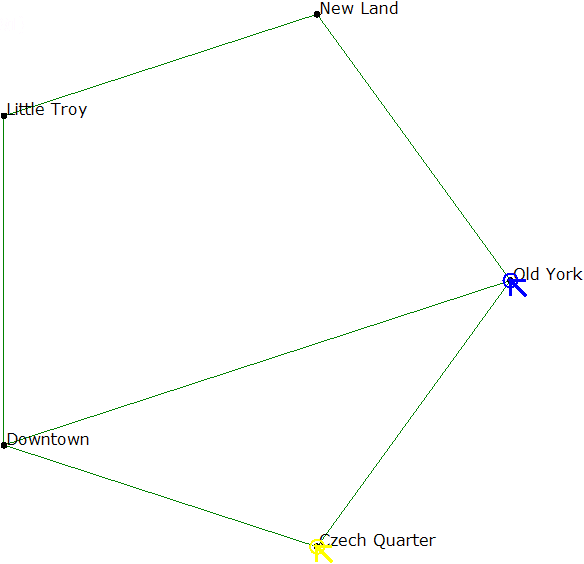
This paper mainly describes implementation of whole action game situated in this introduced space. It begins with model of the program based on Microsoft XNA Game studio [1]. We will go thru real-time programming issues, data representation, used algorithms or modified versions of well-known algorithms for out specific case. And end station of programming part will be implementation of AI for player’s opponent. During this part we will point out several scopes for further development too.

In second part will not be omitted user documentation for creation we make. Reader will find out how to set up and, of course, play the game.

# The game

## Detail description and rules

The city we are playing in is divided into separate quarters. Each of them has its unique name (ex. Downtown). Some of these quarters are connected to some of the others. Together they form a graph. The town graph is always continuous. But degree of one quarter can be only 1.



Picture Town quarters make a graph

Every quarter has somewhere inside flag or empty flagpole. This indicates who is the owner of this quarter. Your flag means that this quarter is in your property. Otherwise the quarter can belong to your opponent or to nobody. Either way is good advice to capture it. The goal of the game is to have captured all quarters in town. When you have or your opponent has reached this objective the game is over. The game begins with one player’s quarter and one opponent’s. Rest of town is without an owner.

In occupied quarters are gradually appearing new guards. They have only one thing to do. When the enemy comes into this quarter, he becomes the target of the guards. Number of guards per one quarter is limited and if you capture opponent’s quarter, his guards will stay until you or your guards kill them. Problem is that limit for guard in one quarter is for sum of all guard – yours and opponent’s. So if you capture quarter full of enemy guards, yours wouldn’t appear until you kill at least one.

How to kill somebody? You can always use your hands, but it’s not recommended approach. It’s not practical. There are four categories of guns:

1. For everybody
2. For guards
3. For players
4. Only boxed ones.

Guns from first category have everyone at start of the game. These from fourth category are available only in boxes. Attention, not only you can take guns from boxes. Your opponent will do it too.

Since we’ve got guns and our enemies have guns it’s necessary to use them. Except guards you will need to shot right the opponent several times. Because when the opponent gets killed he loses all of his quarter except one if he has at least one. And in the one he will appear again alive. If he doesn’t have any quarter, the will show in some empty one. The same thing will happen to you if you get shot. Again, if you lose your quarters by getting shot, your guards will stay there. Only do not appear new ones.

## Similar games

Portal

Z

San Andreas

# Implementation

# User documentation

# Bibliography

1. http://msdn.microsoft.com/en-us/library/bb401006.aspx