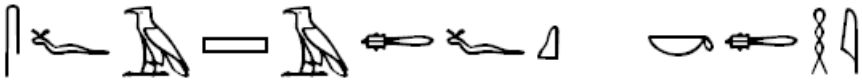
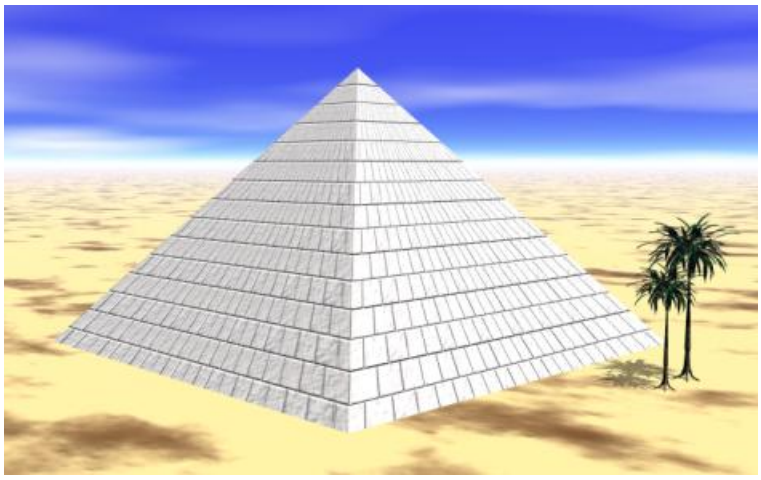


Game Programmming Lab

Formal Game Proposal

Pharaoh's Tomb

Melanie Imhof
Stefan Geiger
Thomas Brunner



Contents

1 Introduction

This document is the highest control-document of the project Pharaoh's Tomb. It describes the main game idea, work packages / cost estimates, and our goals for the Game Programming Laboratory Course. The current project state should also be evident from this document.

2 Game Description

2.1 Story

The game's story leads you as a British archaeologist to far away Egypt where great danger awaits.

After resting 4500 years, pharaoh Taratatu's deathlike silence was broken from some locals. They took the corps out of his tomb to expose it in a museum. However that was a bad idea, because the spirit of the pharaoh has very bad influence to the local environment. The habitants are suffering from environmental disasters.

As a specialist of Egyptian cultures and history, you were asked to help bringing back the body back to the tomb. That's the only way to calm his spirit.

Unfortunately when the locals nicked the body they had unknowledgeable activated some traps.

As can be expected of an adventure game, you have to overcome many obstacles, solve riddles and complete a number of dangerous tasks before you finally bring the mummy of pharaoh Taratatu back to his tomb.

2.2 Gameplay

The player controls a human character from third person perspective. It is possible to jump and hang on ropes and to interact with the environment, such as moving and grabbing boxes to solve puzzles.

Image 1 shows three simple floor plans with several puzzles and image 2 shows a test scene with the shelf puzzle. It illustrates both a correct and a wrong attempt to solve it.

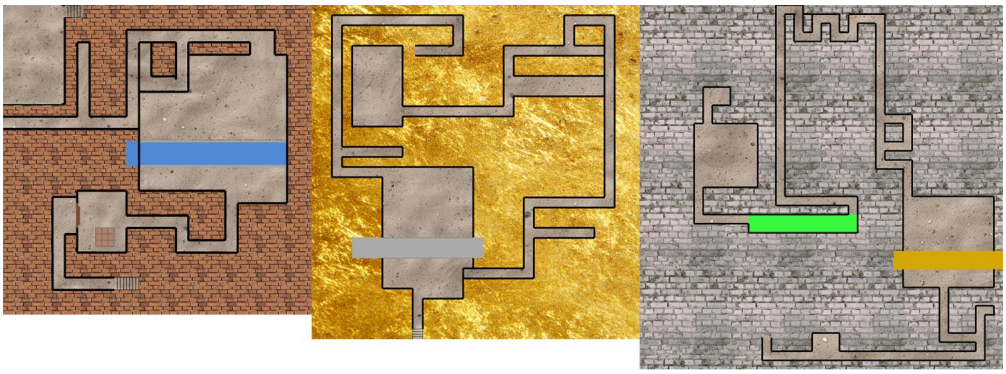


Figure 1: Floor plans

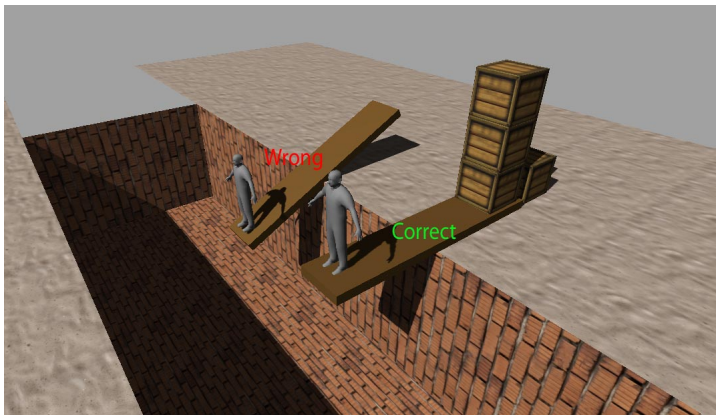


Figure 2: Shelf puzzle

Each puzzle defines its own mechanismn to count a score value. The final score is the sum of all these scores. E.g. physics puzzles count the number of objects involved to solve it, as a ranking of complexity of the solution.

The following sections describe the different puzzles that are planned.

2.3 Puzzles

2.3.1 Memory

Eight hyroglyphes are engraved in the floor which are shown for a short timeperiode at first sight. The goal is to jump on the first tile of a pair, and then on the second tile of the pair. This is to be continued until all pairs are found.

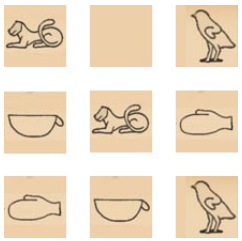


Figure 3: Memory puzzle

2.3.2 Swimming Objects

The player can push physics object into a river and tries to use these objects to cross the river while they are at a gorge portion.

2.3.3 Fire

Several fire emitters placed in the walls obstruct the corridor. The goal is to pass each emitter one after the other when it is stopped for a short timeperiode.

2.3.4 Spikes

There are several spikes placed in the wall. They move as soon as they are triggered by the player. The goal is to first trigger these spikes but to move back rapidely. As they move back, the player can pass. There is also the possiblity to use object lying around to trigger the spikes or to jump over the trigger area.

2.3.5 Stack them up

The goal is to reach the upper floor by stacking up several objects.

2.3.6 Ropes

By swining on serveral ropes hanging from the ceilling, the player can cross a canyon.

2.3.7 Shelves

To cross a canyon, the player can use the object lying around. For example one can use a shelf move it half over the cliff and stack some boxes on one end. Then the player can walk over the shelf without making the shelf fall.

2.3.8 Catapult

There is a mechanism which drops some balls from the ceilling. One can create a catapult to throw the player to the other side of a canyon. The balls falling from the ceilling can be used as the trigger.

2.3.9 Target

Stones lying around can be used to throw on a target point to activate a bridge opening mechanism.

2.3.10 Intoxication

There are serveral possiblities to be intoxicated. For a short duration the vision and controlling of the player is disturbed.

2.3.11 Acid bath

An acid bath is blocking the players way. It has to find and put on a protection suit.

2.3.12 Crazy floor

You have to cross a bridge which however starts turning and moving. This gives a force to the side of the bridge, which forces the player to give movement control to the other side.

2.3.13 Path of Death

The player is given am set of pictures and he needs to memorize them in a short amount of time, after that he needs to follow a path in the exact order of the pictures shown before.

3 Development Schedule

3.1 Team

Melanie Imhof

Semester:	8
Related Courses:	Visual Computing, Physically-based Simulation, Software Engineering, Farben im Digitalen Publizieren, Surface Representations and Geometric Modeling
Related Work:	Internship at GIANTS Software GmbH, Implementation of a Multiplayer-Engine for an upcoming game title

Stefan Geiger

Semester:	8
Related Courses:	Visual Computing, Physically-based Simulation, Computer Graphics, Advanced Topics in Computer Graphics and Vision, Software Engineering, Farben im Digitalen Publizieren, Surface Representations and Geometric Modeling
Related Work:	Lead Programmer at GIANTS Software GmbH Farming Simulator 2008/2009 (http://www.farming-simulator.com), Demolition Company (http://www.demolitioncompany-thegame.com)

Thomas Brunner

Semester:	2, Bachelor FH
Related Courses:	Computer Graphics, Software-Engineering, Engineering-Workflow, Digital Imageprocessing
Related Work:	Project thesis of a very basic GPU ray tracer

3.2 Tasks

3.2.1 Functional Minimum

#	Task	Length	Member	Description
1	Initial setup	2 D	Stefan	Startup the game and initialize and track the current state
2	Scenegraph implementation	4 D	Thomas	Create the implementation of a basic scenegraph with support for transformgroups, shapes, light and cameras
3	I3D loader	4 D	Thomas	Create the implementation to load a scenegraph from an i3d file
4	Physics integration	4 D	Stefan	Add a physics engine and run it in a separate thread. Commands should be buffered and executed once per frame
5	Render system	4 D	Stefan	Travers the scenegraph and render the visible object. Setup the material and shader parameters
6	Character controller	4 D	Melanie	Implement a character controller to move and jump
7	Camera controller	2 D	Melanie	Implement a simple camera controller
8	Environment interaction	2 D	Melanie	Implement a simple model to pick up objects in the world
9	Character modelling	4 D	Stefan	Model a simple mesh of the player character
10	Test world modelling	4 D	Stefan	Model a simple test world with two puzzles
11	Shelf and Memory puzzle	2 D	Melanie	Implement the shelf and memory puzzle code

3.2.2 Low Target

#	Task	Length	Member	Description
1	Keyframe Animation	4 D	-	Update the scenegraph transform groups involved in a keyframe animation
2	Material/Shader system	4 D	Stefan	Dynamically create the shaders needed for a given shape and environment (lights, fog..)
3	Character animation	8 D	-	Create a simple animation of the character model
4	Puzzles code	8 D	-	Implements more puzzles
5	Puzzles modeling	8 D	-	Create models of more puzzles
6	Map modeling	8 D	-	Create models for the environment
7	Simple in-game GUI	4 D	-	Create a simple in-game gui to show help and status
8	Fail restore points	2 D	-	Add points that the player is placed if a puzzle was failed

3.2.3 Desirable Target

#	Task	Length	Member	Description
1	Camera controller improvements	4 D	-	Improve the camera controller to collide with the environment and do some smoothing
2	Character controller improvements	4 D	-	Improve the character controller to support rope swining and more advanced environment interactions
3	Shadow mapping	4 D	-	Add shadow mapping support to rendering
4	Game menu GUI	2 D	-	Add a nice game menu GUI
5	Character sounds	2 D	-	Add sounds directely triggered by the player (footsteps, collisions...)
6	Background sound	4 D	-	Add sound that runs in the background to improve the atmosphere
8	Advanced rendering effects	4 D	-	Reflection/Refraction, Postprocessing effects (e.g. intoxication)

3.2.4 High Target

#	Task	Length	Member	Description
1	Random special events	4 D	-	Add events that happen randomly (e.g. falling stones)
2	Split-screen cooperative play	8 D	-	Add cooperative play and add special two-player puzzles.
3	Simple savegames	2 D	-	Store the current progress between the levels
4	Idle animations	4 D	-	Play random animations if the player is idling
4	Special sounds	4 D	-	Add sounds that are played if a player does something wrong or right

3.2.5 Extras

#	Task	Length	Member	Description
1	Control setting GUI	4 D	-	Add a control setting GUI
2	Random characters sounds	2 D	-	Add sounds that are played randomly by the player (cough...)
3	Network cooperative play	10 D	-	Allow mulitple players over the network to play in cooperative mode
4	Collectables	4 D	-	Add special items that can be collected while playing the game to receive a special award.

3.3 Schedule

Date	Melanie	Stefan	Thomas
08.03.		Initial setup	
15.03.	**Proposal Final**		
21.03.	Character controller	Physics integration	Scenegraph implementation
22.03.	**Physical Prototype, Final In-class Pitch**		
26.03.	Camera controller	Render system	I3D loader
01.04.	Environment interaction	Character modelling	Keyframe Animation
08.04.	Puzzles code/Puzzles modeling	Material/Shadersystem/Map modeling	Simple in-game GUI
19.04.		Character Animation	Fail restore points
19.04.	**Interim Report, Presentation/Game Demo**		
23.04.	Camera controller improvements / Character controller improvements	Shadow Mapping	Game menu GUI
05.05.	More puzzles	Advanced Rendering effects	Character Sounds / Background Sounds
10.05.	Bug fixing		
10.05.	**Alpha Release**		
17.05.	Bug fixing, Layer 4		
17.05.	**Playtesting**		
25.05.	Bug fixing, Layer 4, polishing		
25.05.	**Final Presentation Debriefing**		
29.05.	**Conclusion, Final Digital Video**		
01.06.	**Final Presentation**		

4 Assessment

The game features an interesting environment which is covered with myth. Puzzles have always fascinated people in all age classes.
Physically-based puzzles such as the shelf puzzle tempt people to try different ways to solve it.
In combination with a smooth character animation and control, this leads to a very pleasent experience.
Additionally the learning aptitude of the players is increased since there are serveral puzzles which enforce memorization and logical reasoning.

Selling points

- Interesting and mythical environment
- Puzzles are fun to solve for all age classes
- Physically-based puzzles tempt to solve the puzzle in different ways
- Brain training