K.O 3D Game

Software Design Document

University of central Punjab Bahawalpur

Class: BSCS 7th A

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General Information about the game

A two-player fantasy beat-em-up, taking place in a world inspired by the old Japan, with creatures fighting for the big prize.

Genre:
Beat em up

Art:
3D Cartoon style

Programming Language:
Python

Engine:
Panda3D v1.9.2 or higher

Supported operating systems:
All by Panda3D supported Systems (GNU Linux/Unix, Windows, Mac, [Maybe also Web and Android])
Official and Tested: GNU Linux/Unix
Community Tested: Windows, Mac and others

System versions:
64 Bit

Languages/Translations:
English

Game Location:
Various fantasy worlds styled like old Japan

Gameplay:
This game focuses on the two player combat system where the players have the choice between characters and arenas. Each character has a set of attacks and can defend himself to try to win the fight by beating the opponent.

Storyline short:
Ferocious creatures fight in battle arenas for the big price, their lives.

The Story

In a time where humans have gone extinct and other creatures have evolved taking place where humans have lived before. Though things have gone rough and the world is falling apart everyone left fights to survive or lives with his faith.

The number of the few ones who decided to fight is decreasing day by day and rarely new opponents appear. You may ask now what are they fighting for. It's for the entrance to a room with a portal which leads to another world, but prophecy tells, that only one person can step through it before it collapse.

The Worlds

This chapter will describe the worlds, where the game is located.

Temple Outside

A big temple on top of a mountain. The fight takes place in front of the two level high main building where big stairs lead upward to the huge temple doors. On the bottom of the stairway left and right are two guardian statues. The main square is paved with light gray colored stone plates. Left and right from the main building on are smaller buildings connected to each other. The roofs of the buildings are covered with brown roof tiles and the walls are made of wood and strong rice paper.

In the background are a few posts with ropes full of small colorful flags. Further behind one can see cloud covered mountaintops and a blue sky.

A chilled wind blows in this area letting leaves of nearby trees fly by during the fight.

Somewhere in the background one can hear the wind and some insects and birds natural to this area.

Temple Inside

Inside the temple are wooden floors and walls. Stone pillars hold the ceiling which is also made of wood planks. Small windows lighting the hallway creating godrays.

Inside the temple it is very quite, just the characters sounds can be heard and nothing is going to disturb the fights held in this area.

Art Style

This section will be describe all the graphic styles used in the game

Characters

The characters are cartoon styled creatures of various species. Due to the fact that humans have gone extinct, there will be no or just only a few humans left over.
Most of the characters have only very little to no armor and cloths due to them having other body covering things like fur or scales.

Level

The levels should fit to the characters and have a rather cartoon styled look. They will consist of the foreground area which should have a fair amount of details as this will be the main focus during the fight, the mid-ground area will feature bigger and little less detailed objects hiding big parts of the background. The background can consist of big but rather low resolution images if at all necessary.

User Interface

The UI will have a modern simplistic look. Most results will be shown by animations and other visual effects. Just the life points of each player will be shown by a bar centered on top of the screen during the fight.

Menu

The main menu consists of a big background image showing one of the levels with a few extra stylistic elements like tinted in red and the games title added to it in big white Japanese kanji letters. The buttons are placed on the left side centered in the middle of the screen below the main menu title. Stylistic are the buttons designed with a fade to transparency towards the right side. The buttons background should resemble a good contrast from background to the text on the buttons. The Credits part of the menu will be shown as a scrolling text, scrolling upward from bottom to top and repeat when done. The background will be simply black and there should only be one button to return to the main menu.

Music and SFX

This chapter describes all the sound effects and songs that are heard in the game

General information about the songs in the game

The songs in this game should be powerful pushing songs of the rock/metal genre with influences of Japanese music. Similar to some songs of Japanese anime songs.

Music

Menu theme

A more calm but powerful soundtrack giving the player an epic mood for the upcoming battles.

Fight theme

The fight theme should be a fast paced metal soundtrack driving the pace of the fight.

Sound effects

Character

The characters have sound effects for actions when being hit. Also the characters walk movements will create step sounds. Other than that there won't be sounds for the characters.

Environment

Just the outside arena of this game will have sound effects, the inside arena will be quiet. Outside the player can hear wind noises, crickets and maybe some birds from mountain regions of Japan.

Main menu

The main menu will be build up with 4 elements. The background which is a big image showing the first arena tinted in red with the title. To the left will be the menu title showing "Main menu" and below that three buttons for start, credits and quit.

Character selection

In the character selection screen the player have the choice between two characters. These characters are listed with small preview images in the middle of the screen. A click on one of those images will reveal a bigger preview image on the side of the player who should select a character. On the bottom will be a row with two buttons to move back or proceed to the next part as well as a informative text describing what the player should do next.

Level selection

The level or arena selection will come after the character selection and is quite similar to it, with the difference that it only has two big buttons with a preview image of the arena on it. As soon as one of the arenas has been clicked, the game will proceed to the fighting scene.

K.O. screen

This screen will be shown after one of the characters got defeated. It will simply fade the screen with a slightly transparent black overlay and displays text respectively for the player who won the battle.

Settings

Here all the game Customizable options are shown and their effects described.

All configurations will be changeable through the engines own prc files. We do not include a custom setting screen for the game as this would bloat our tutorial and we already cover GUI usage in other parts of the game. So we leave this up to the tutorial user to build his own settings screen to give him the possibility to learn by coding something on his own.

Characters

Character 1 (Red Demon)

This section will list information about the second, playable character in the game.

Name	
Gender	Male
Height	1.68m
Species	Demon
Age	Unknown

Look:

A red skinned demon with green hair and white eyes. He has large fangs and wears green camouflage cargo pants.

Character 2 (Wolf)

This section will list information about the first, playable character in the game.

Name	
Gender	Male
Height	1.72m
Species	Wolf
Age	35

Look:

A humanoid gray and white furred Wolf with some steel armor shoulder plates and bracers.

Animations

This chapter describes and list all the animations of this game.

Player characters:

Idle

Run

Punch Left/Right

Kick Left/Right

Defend

Got hit

Defeated

Object and Level specific animations:

Falling leaves in the outdoor arena using particle effects and leave sprites.

Gameplay

In this chapter, the general gameplay of the game is described.

Menu

Navigating

For navigating through menus the mouse or keyboard is used. For more detailed disclosures see item control → menus
Buttons and other interactive elements

→ Change color when mouse is over them

→ Activate with left click

Menu Switch

Move between menus:

When the player moves between menus the old menu will simply be hidden and the new menu if there will be one, will be shown without any transition. Due to the light menus, there shouldn't be any lag when switching between menus.

Player

Moving

Forward

The player will move in the direction he is facing to.

Backward

The player moves in the opposite direction of it's viewing direction.

Attack

The player attacks the opponent with the attack respective to the pressed key.

Life

Each player has a limited amount of health points which are being drawn when he is hit by the opponent. If the life points have been brought to 0, the character will be defeated.

Camera

Behavior

The camera moves back and forth and will always keep both characters in the viewing area. It also will keep a minimum distance to the players and also always stay in the center of a imaginative line between both characters.

Control

Here will be the descriptions of the controls in any part of the game.

Menus

To navigate through the menus one can use the mouse cursor or the arrow keys and enter key.

The Escape key will navigate to the previous menu or if the player is at the main menu, ask him if the game should be quit.

Inside the game

This is a listing of all possible actions in the game with the "by default" key setting for both players

Moves

Action	Key Player 1	Key Player 2
Move Left/Right	D/F	Left-/Right-arrow
Attack Kick Left/Right	A/S	K/L
Attack Punch Left/Right	Q/W	I/O
Defend	E	P
Return to menu	Esc	

Level

Levels

Temple Outside

The fighting ground will be a simple textured plane, in the mid-ground we have some low-poly 3D buildings and in the background some transparent planes with mountain textures.

Collision solids will be created for a wall left and right at the end of the level so that the players won't be able to move out of the world.

Temple Inside

As with the outside level, the ground will be a textured plane. In the mid-ground we have stone pillars and in the background wooden plank textured walls with 3D modeled windows with godrays.

Collision solids will be created for a wall left and right at the end of the level so that the players won't be able to move out of the world.

Level Files

This section describes the level file specifications.

Levels will be stored in separate and consecutively numbered folders. The models will be stored in egg/bam files named arena.egg with the textures and additional models laying directly next to them.

Multimedia Tech Specs

This chapter describes further technical details for the Artwork files like 3D models and other graphics and audio. It will also list recommend applications to work with on this project.

3D Models

To generate 3D Models, the recommended application is Blender as all files need to be stored in the .blend or other open and editable formats for blender, so everyone can open and edit the files.

The sizes used in the game are as follow:

1 Blender/Panda Unit = 1 m

Audio

To generate Audio files, one can use various recording and digital audio workstations, the recommended recording and DAW is Ardour. For simpler tasks, Audacity may be used. Audio generators and tracking applications can also be used, whereby the following ones will be recommend. Musescore, Tuxguitar with QSynth and LMMS.

Files and file types

In this chapter, file types are shown, which should be used preferably.

In general, free and open formats are prefered to Proprietary and closed formats.

Text

Text should, if it doesn't contains special formatting or data other than text (eg images), be saved in plain text files. Once formatting or other things are required, which can not be stored in plain text files, should use either the open document standard, or the Portable Document Format. Therefor the listed file extensions below should be used preferably.

For text only files:

.txt

without ending, just the filename

For formated Text and others:

.odt

.pdf

Images

Raw images

Images that are not directly used in game. These images are used in the image editors. Here we just recommend some files, but it doesn't really matter which formats you choose as long as they can be opened with open source tools which are accessible to everyone.

Recommended:

.xcf

.ora

Concept art and sketches

Concept art and sketches must not be stored in very high quality. For this purpose, Therefor the JPEG format can be used. Scanned images should have a resolution of around 300dpi if they are to be processed or a smaller resolution if they are intended to serve only as an illustration.

Preferred ending:

.jpg

Textures and In-Game Graphics

All graphics used in the game should be of the highest possible quality, but even here the file size should not be unnecessarily high. This must be decided according to each image and can not be set fix here.

Preferred formats:

.png

Note:

For Textures the Engine intern TXO file format should be used.

Further info at: http://www.panda3d.org/manual/index.php/Texture_Compression

Audio

For audio files, make sure, as with the graphics, which quality they should have. For editing the highest quality possible should be used. For integration into the game, space-saving formats should be used.
Preferred formats:

High quality:

.flac

Medium quality:

.ogg (Vorbis)

Applications project files may be stored in their native format.

Models

All models can be stored in 3 different formats. A model for editing in the 3D editor, one to be integrated into the game during the programming phase and a final format for deploying the game to the gamers.

Formats for editor:

Blender3D Editor: .blend

possible other formats for exchange:

.dae

.obj

Format for Engine:

.egg

Format for deploying:

.bam

Programming

In this chapter everything is written down that has to do with the programming of the game, for example the used engine and the used programming techniques as well as some reasons why to use these.

Engine

As for the game, the game engine Panda3D is used. We use it because this tutorial is specifically written for that engine and for the engines capabilities of doing all the work we need to get done in a simple and fast way. On the other hand the engine is highly extensible, fast and robust through its C++ core.

Link: http://www.panda3d.org/

Programming language

The Language which will be used for the programing of the game is Python. As this is the main/reccomended language for using the game Engine.

Link: http://www.python.org/

Further Information for the Programing

This section describes basic programming techniques for the game.

Key points:

The PEP standards should be respected.

Link: http://www.python.org/dev/peps/pep-0000/

Event based

Module throw Events, which could be caught by everyone who needs them. As of that no module has to know about any other module.