TEAM PALINDROME

[ЯRUNNUЯR]

DESIGN DOCUMENT

LEO C, GORDON T, JONATHAN L, KHUE N

VERSION 2.5

JUNE 7, 2011

Contents

VERSION HISTORY 3
GAME OVERVIEW 5
AUDIENCE, PLATFORM, AND MARKETING 9
FEATURE SET 9
THE GAME WORLD 10
CAMERA 11
GAME CHARACTERS 11
USER INTERFACE 11
MUSIC AND SOUND EFFECTS 12
ART 16
SINGLE-PLAYER GAME 23
MULTIPLAYER GAME 24
RESOURCES & LINKS 24

VERSION HISTORY

Version 0.1 – April 22, 2011

- First version of the document.
- Updated some Game Overview elements.

Version 0.2 – April 24, 2011

- Added information to rest of Game Overview elements.
- Added information to all of Feature Set
- Added some information to Audience
- Added information to all of Characters
- Added information to all of Art

Version 0.3 – April 24, 2011

- Update World setting in Game Overview
- Added why people would buy reasons to Platform section of Audience
- Added information to all of User Interface
- Added some information to Single-Player game

Version 1.0 – April 27, 2011

- Added/Updated/Increased detail to all sections of design document
- Removed extraneous sections

Version 2.0 – April 27, 2011

- Copied design doc over from original document to a new word document to remove weird auto formatting issues tied to original document. This document is now tied into the Word autoformating/style system.

Version 2.1 – April 27, 2011

- Updated Gameplay synopsis mechanics
- Updated all the graphic sections to reflect the art direction/environment style we decided on. Outdoor/Cave and the environmental obstacles to be dodged.
- Added the multiplier effect to the sections that mention scoring
- Added visual aids
- Added sprite sources

Version 2.2 – April 27, 2011

- Added Prototype section

Version 2.3 – May 12, 2011

- Added Game Framework
    - Added Framework State Diagram
    - Added PlayState UML Diagram
- Added Level Design section
    - Added Layer section
    - Added Tile section
- Added Graphics Resources

Version 2.3 – May 19, 2011

- Update Graphic Resources
- Added References for where sound resources came from

Version 2.4 – May 26, 2011

- Runner animation
- Sky backgrounds
- Coin tile
- Death animation
- Score penalties

Version 2.5 – June 7, 2011

- Updated Graphics
- Added Scoreboard
- Added Screens
- Updated Layer Information
- Changed to “Night/Day” paradigm

GAME OVERVIEW

Game Logline

Runnur is a side-scrolling, adrenaline pumping, run for survival. The quick wits of players are the only thing that will keep them alive… a little longer.

Gameplay synopsis

Mechanics:

Players will try to traverse a continuous stream of randomly generated obstacles but using a mirror/switch mechanism for as long as possible. But sooner or later they will succumb to the dangers of the world. So they are trying to rack up as high a score as possible.

In addition to the motivation of not losing speed by dodging obstacles, successive passing of obstacles will build up a score multiplier. The more obstacles a player can successfully bypass, the more points they will begin to rack up. Crashing into an obstacle will decrease the multiplier, if not outright reset the multiplier.

The random generator will have a baseline pattern all players will be able to expect.

1. Initially all obstacles will be mirrored so players can focus on the top half and ignore the bottom world without issue
2. The focus will eventually shift to the bottom world. The generator will be making objects in such a way player will be able to ignore the topside and just focus on the bottom side of the world.
3. Finally randomizer will begin creating obstacles on both sides and the player will have to split their attention.
4. After this point, the randomizer just starts cranking out more and more difficult obstacle combinations.

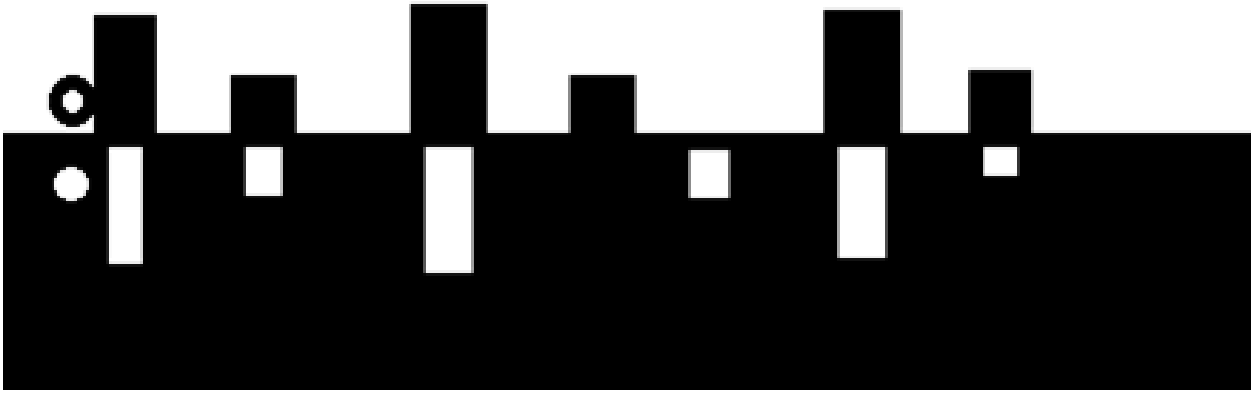
Look & Feel:

Runnur will be using 8-bit graphics and audio for a retro feeling game. Setting-wise it will take place in an outdoor environment and a cave environment. Color scheme still in discussion.

GAME DETAILS

Description

The player controls the “hero” that interacts with the world. The hero has a mirror image underneath him (like a shadow) that is also affected by the environment. The top hero is WHITE and the mirror hero is BLACK. Both the hero and the mirror are linked to each other. The player will either be jumping to dodge obstacles, or matching the “hero” color up with obstacles to pass through them.



Game genre?

Retro/Side Scroller/Racing/Survival/Other

Is this single-player or multiplayer game?

Runnur is primarily a single-player game, though there will be the option to do a two-player race mode.

Is this 2D or 3D?

2D

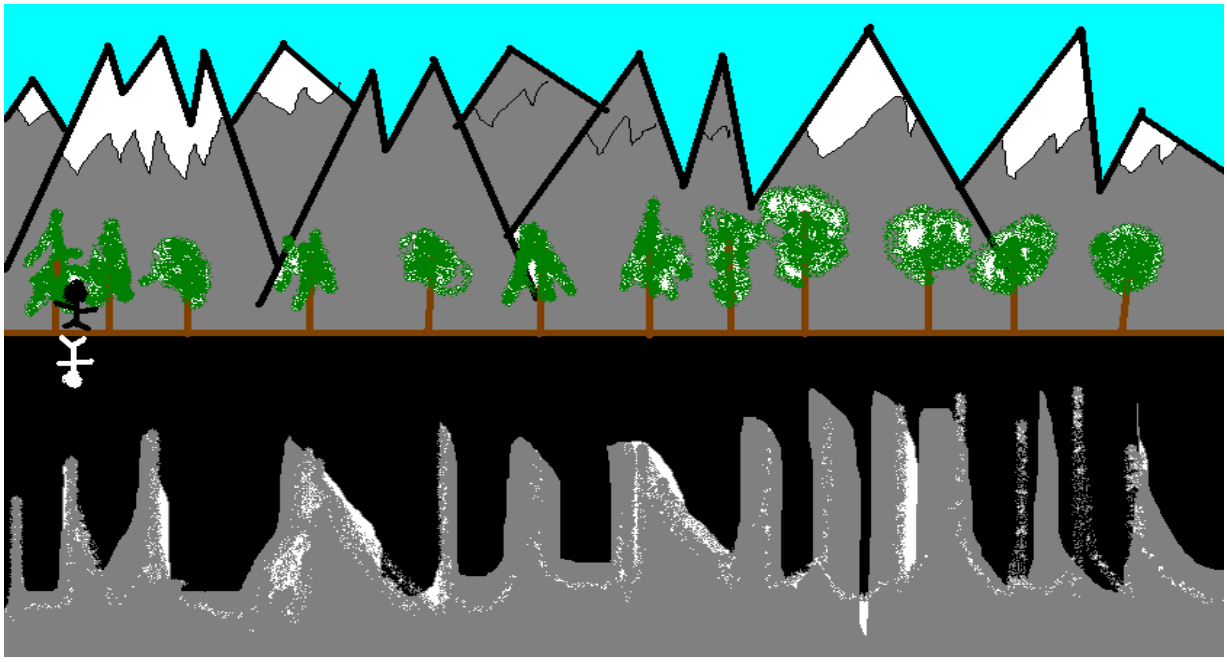
Where does the game take place?

~~The game environment will be an outdoor and cave environment.~~

~~The top side will be outdoors in the wilderness. The backdrop of that side of the stage will be sky, mountains, trees, bushes.~~

~~The cave environment will be stalactites and stalagmites.~~

The game environment will be a mirrored world where there is a “day” world above, and a “night” world. Each environment will have an outdoors theme. Originally we planned to make it an outdoors/cave theme, but we would need a real artist to do that, and our beta testers seemed to like the night/day idea.



What do I control? How many characters? Can I use vehicles?

There is only a single character to control, whose actions are either to jump or swap sides. Movement is automatic, with players speeding up bit by bit the longer they run uninterrupted and slowing down when they encounter obstacles. Players will be kept engaged by having to keeping on their toes and successfully bypassing obstacles as they come along.

What is the main focus?

The main focus of the game is to travel as far and as long as possible. Players are trying to attain high scores, both for self-satisfaction and bragging rights among their peers.

How long the game lasts? Or how long game matches last?

The game lasts as long as the player can survive. On average a game match probably won't exceed a few minutes.

Comparison

Three similar games to Runnur are:

- Canabalt – Canabalt is a very straight forward running game. Players can only jump, timing those jumps to either avoid obstacles or pits. It is single "world", meaning it has no mirror world aspect.
- Robot Unicorn Attack – Also a single "world" game, there is more jumping in this game, as well as the addition of a dash mechanic to break through obstacles in the track. Artistically it's very colorful. More detailed and colorful than what we intend for Runnur.

- Little Runner – This game is very different from the prior two. While a similar style, there are finite levels players can reach the end of. And players control the world itself, rather than the hero. Moving the world to allow the hero to pass. Very, very different mechanic from what Runnur intends as our world is to be randomly generated.

What is unique?

The key unique aspect of Runnur is the mirror world, plus position swapping mechanic. In the other games players need only focus on one plane. In ours there are two for players to be concerned about.

Why create this game?

The game strikes us as one of those simple to play type games that will keep players coming back for several runs trying to beat each other and personal best scores. And technically, while the gameplay itself is simple enough, the other features like random level generation with increasing difficulty, we feel will present a challenge.

AUDIENCE, PLATFORM, AND MARKETING

Target Audience

Runnur is an all ages game. There won't be gore or violence. The 8-bit art style does not lend itself to displaying violence like that.

Platform

For the purposes of the class we are developing for the PC and Xbox 360 as the library allows for it. But strategically, we would release the game online for the PC for free. Like Canabalt, leverage online popularity of the PC version for Ad revenue and promotion of sales on other platforms, mobile app and Xbox Live Arcade.

Top Performers

Canabalt and Robot Unicorn Attack are the notable games in this field. Of the two, Canabalt is the only one to have taken steps to monetize their popularity through sales.

Feature comparison

Feature wise, Runnur is quite similar to Canabalt and Robot Unicorn Attack. Which is not a surprise as the core of all three games are the same game. The implementation of the mirror world and swap action, pacing of the game, art, and music are what would help us stand apart. Just as Robot Unicorn Attack's art and dash feature set it apart from Canabalt. And Canabalt's art and sleekness set it apart from the other flash games of the same vein it came from.

FEATURE SET

General features

- High Scores
- Randomized level generation
- Increasing level difficulty

Multiplayer features

- Survival Race

Level Editor

- None, game levels are to be randomly generated

Gameplay

Gameplay, and controls as simple:

- Jump, to avoid obstacles
- Swap, to avoid/pass through obstacles

THE GAME WORLD

Overview
Dual world, bright version on the top side and a darker version on the bottom side. Setting is still in discussion.

Key locations
No key locations, world is never the same as it is randomly generated as players run the stage.

Travel
Players will automatically begin running across the ground once the game starts. The longer the player can run uninterrupted by obstacles, the faster they begin to run. Crashing into anything will cause the player to slow down, even stop at times.

Scale
Normal world scale, hero is not an ant, nor a giant. So if we make our hero only a few pixels high, the buildings/trees/obstacles will be similarly small. Conversely if we decide to make the hero fairly large, the environment objects will be scaled larger and take up more of the screen.

Objects
There are 3 main objects of the game world.

- Background layers.
    - Will be scrolling at different speeds for the illusion of movement
    - Trees, mountains, sky, stalactites, etc.
- Platform levels
    - For player to jump up to or down from.
    - Nothing fancy. Just dirt and rock floor textures
- Obstacles
    - The stuff the player will jump over/crash into/run through
    - Crystals and rock walls

Weather, Day and night
Day and night are included in the game, but they are very superficial; they don't affect gameplay.

Time
Game time determines when the difficulty gets increased in the stage generation

Water, Other elements
No water or other elemental features in the world.

CAMERA

Overview
Camera has a base speed it moves at. Should player screw up too much and slow down too much as a result, they will experience camera death when they fall off screen.

GAME CHARACTERS

Overview
Single player character. Non-descript person

Character creation
No decisions to be made by players

Enemies and monsters
At present the enemies and monsters of the game world are the world obstacles

USER INTERFACE

Overview
A very sparse, limited UI will be used. We do not want players to get distracted from the business of avoiding the obstacles.

Details
Players will be able to see their current score, score multiplier, and the high score.

Game Framework

Overview

The overall game framework will act as a giant state machine (as shown in figure 1). The optional states that are shown are not essential to our design, but we are planning to add them anyways.

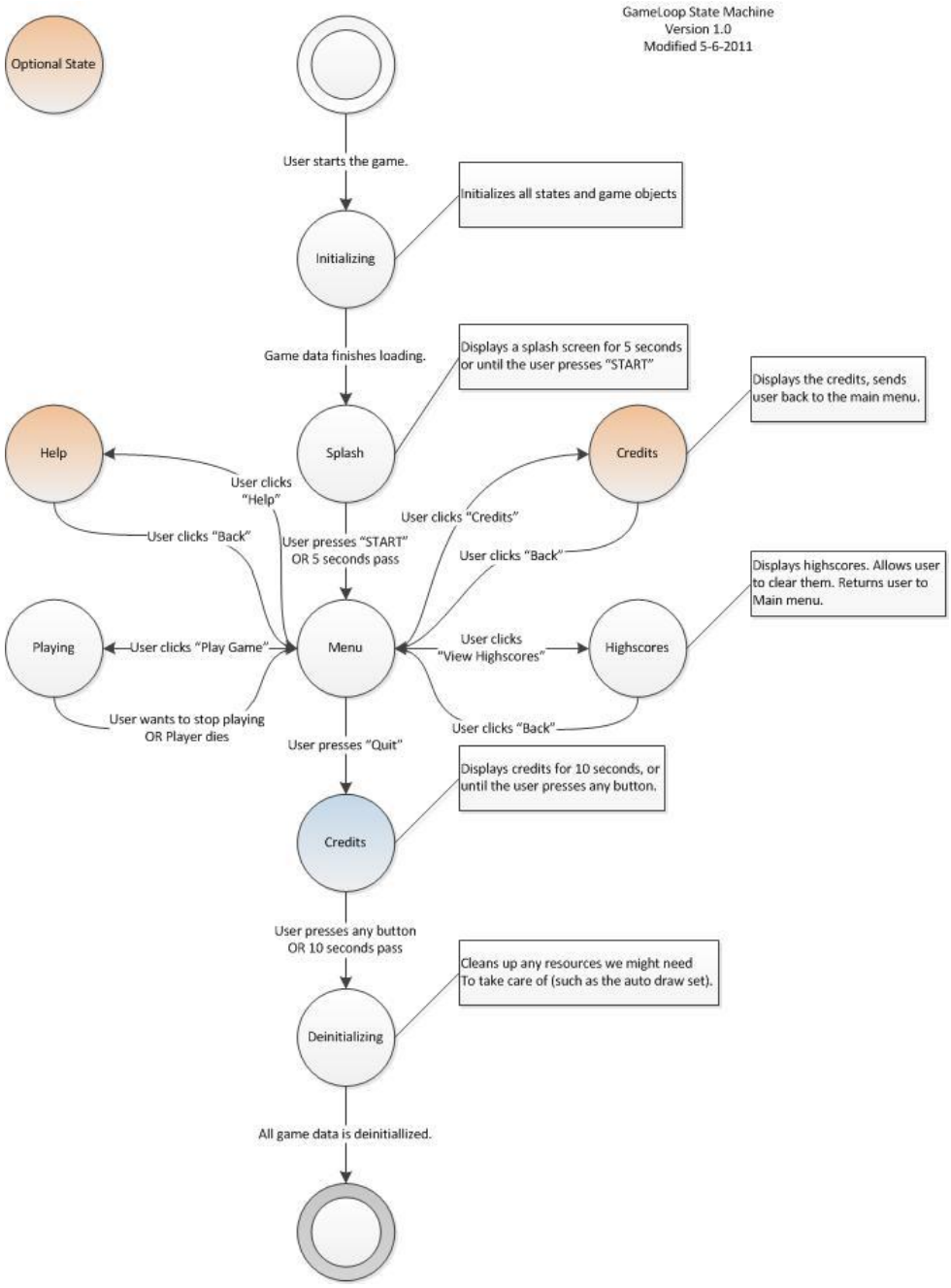
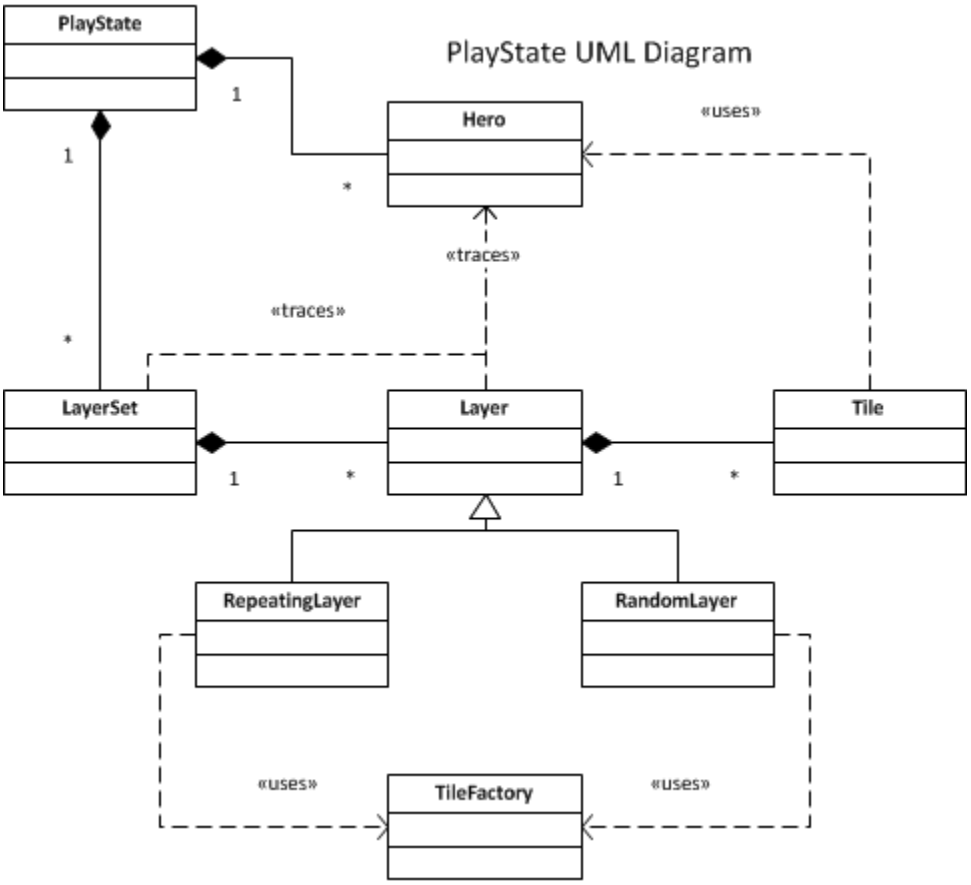


Figure 1

Play State UML Diagram



Level Design

Camera Dimensions

The Camera will initially start centered on 0,0 sized at 50x37.5.

- Proposal: We dump the resizing camera, since it changes the width of the screen as well as the height.

~~If the user gets a character within 10 units of the top/bottom of the screen, the screen will start resizing *with respect to the left side of the screen* up to 100x75. If both of the characters are more than 10 units from the top/bottom, the camera will shrink until it is the initial size.~~

Layer Dimensions

- Proposal: Create an editor for the background layers.

Foreground (Collision) Layer

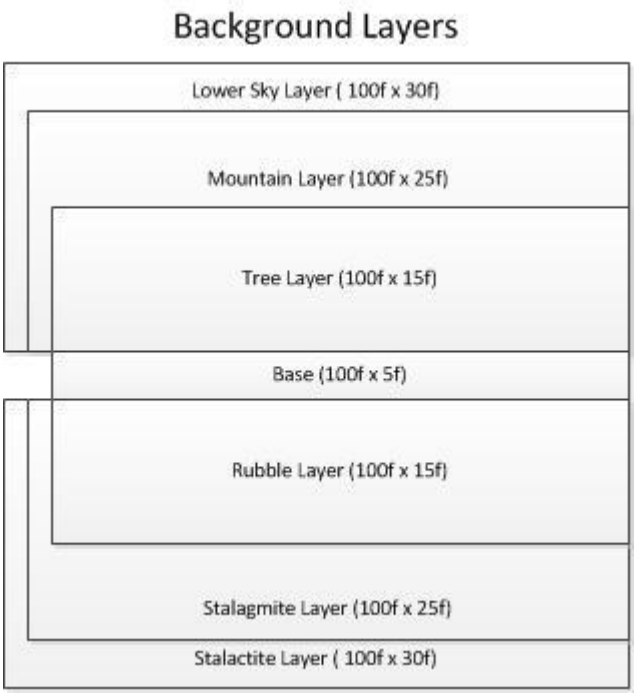
~~This layer is placed "over" all the other layers and is randomly generated. Its dimensions will be 100x75, with tiles that are 2.5x2.5 units.~~

Apparently the aspect ratio depends on the pixel dimensions of the screen. Because of this, we won't necessarily know the height of the screen in float units. Therefore we will set the width to be 100 units, and represent dimensions as a ratio.

Sky Layer

These layers are repeating, background layers that represent the sky or the top of the cavern respectively. They are 100x30 in size and use 50x50 tiles. They move at 1/10th of the foreground speed.

- Idea: Shrink to 25x25 tiles, have gradual day-night transitions.



~~Mountain Layer / Stalagmite Layer~~

~~These layers are also repeating backgrounds that contain mountains or stalagmites, respectively (In reality, the artwork can be changed however we want, but it helps with conceptualization). The layer dimensions are 100x25, and use 25x25 tiles. They move at ½ foreground speed.~~

- ~~Idea: Add second layer of lower mountains that move at ¼ foreground speed.~~

Tree Layer

A third layer of scrolling background that represents trees. These layer dimensions are 100x42 with 42x21 tiles. They move at the same speed as the foreground.

- Idea: Add secondary layer that moves a little slower (to add depth).
- Artistic note: These layers need to be darker than the foreground so that they do not confuse the user.

Base Layer

A final layer that represents the border between the top and bottom worlds. It is a scrolling, repeating layer. Its dimensions are 100x5 with 5x5 tiles.

- Artistic note: This should probably look like lightening or a mirror or lava.
    - Update: We made it look like lava.

Tiles

Invisible Tile

Isn't visible. This is the default tile type.

- Proposal: Make this a background tile with a transparent texture.

Background Tile
Displays some graphic. Doesn't interact with the hero.

White Tile
Displays the "White Tile" graphic. If a black hero collides with this tile, the tile pushes the hero back and disappears. If the white hero collides with this tile, it behaves like a background tile.

- Idea: Display some sort of collision animation or particles.

Decrements the player score by 10 points on contact.

Black Tile
Displays the "Black Tile" graphic. If the black hero collides with this tile, the tile pushes the hero back and disappears. If the white hero collides with this tile, it behaves like a solid tile.

Decrements the player score by 10 points on contact.

Solid Tile
~~Pushes the hero out of the tile on collision (i.e. behaves like a solid object).~~

- ~~Idea: Display some sort of collision animation on mirrored hero.~~

We ended up changing these tiles so that the player just died on an X collision, and then got pushed up on a Y collision

~~Red Tile~~
~~On collision allows the hero to pass through, but "slows" the hero down (i.e. the hero passes through at half the speed it would a background/invisible tile).~~

~~Green Tile~~
~~On collision allows the hero to pass through, and "speeds" the hero up (i.e. the hero passes through at twice the speed it would a background/invisible tile). These tiles shouln't appear as often as the red tiles.~~

- Proposal: Powerup tile which gives the hero things like controlled speed boosts, super-jumps, ability to pass through solid blocks, or gain extra points.
    - Follow-up: Implemented the coin tile.

Gem Tile
Gives the player extra points on contact.

- Update: Changed to red gem.

MUSIC AND SOUND EFFECTS

Overview
8 bit soundtrack and sound effects that fit the world

Details

Music tracks
Fuelship by Syphus, a public domain soundtrack was used. Downloaded from the 8-bit Magic: A Module Chiptune Collection

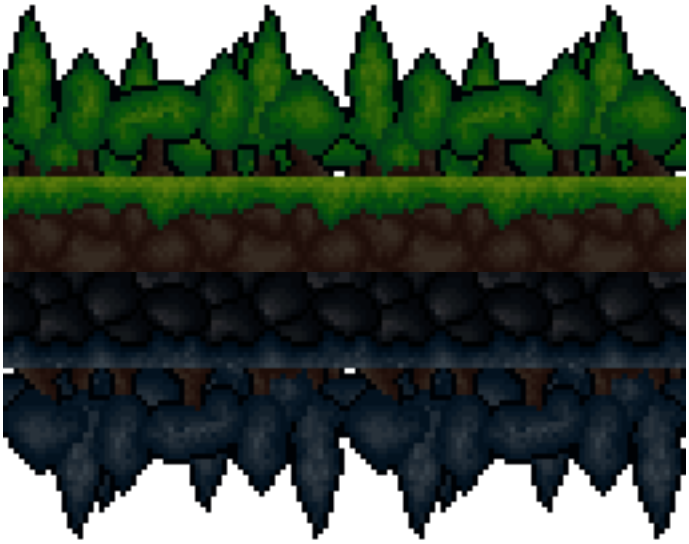
Sound effects
8-bit sound effects generated through SFXR

ART

What kind of style will be used in the game?
~~8-bit art style. Simple and to the point.~~ 8-bit pixel art. We want to go for the “retro” look.

Needed building models.
None.

Scenery models
Multiple level transparency backgrounds the effect of running through a world. Refer to Canabalt game for example of style.

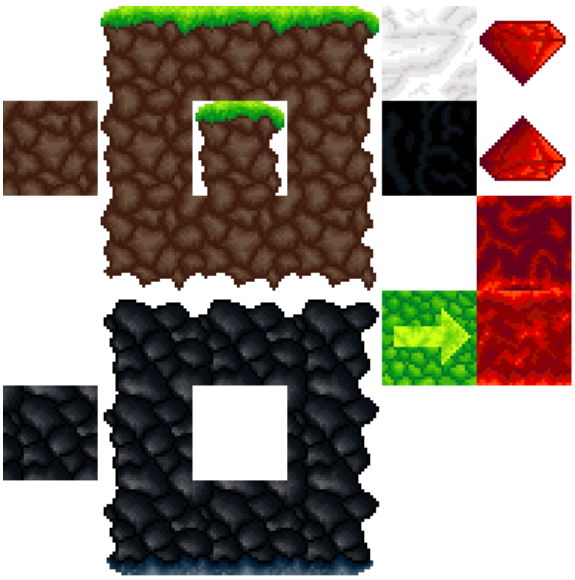


Character models

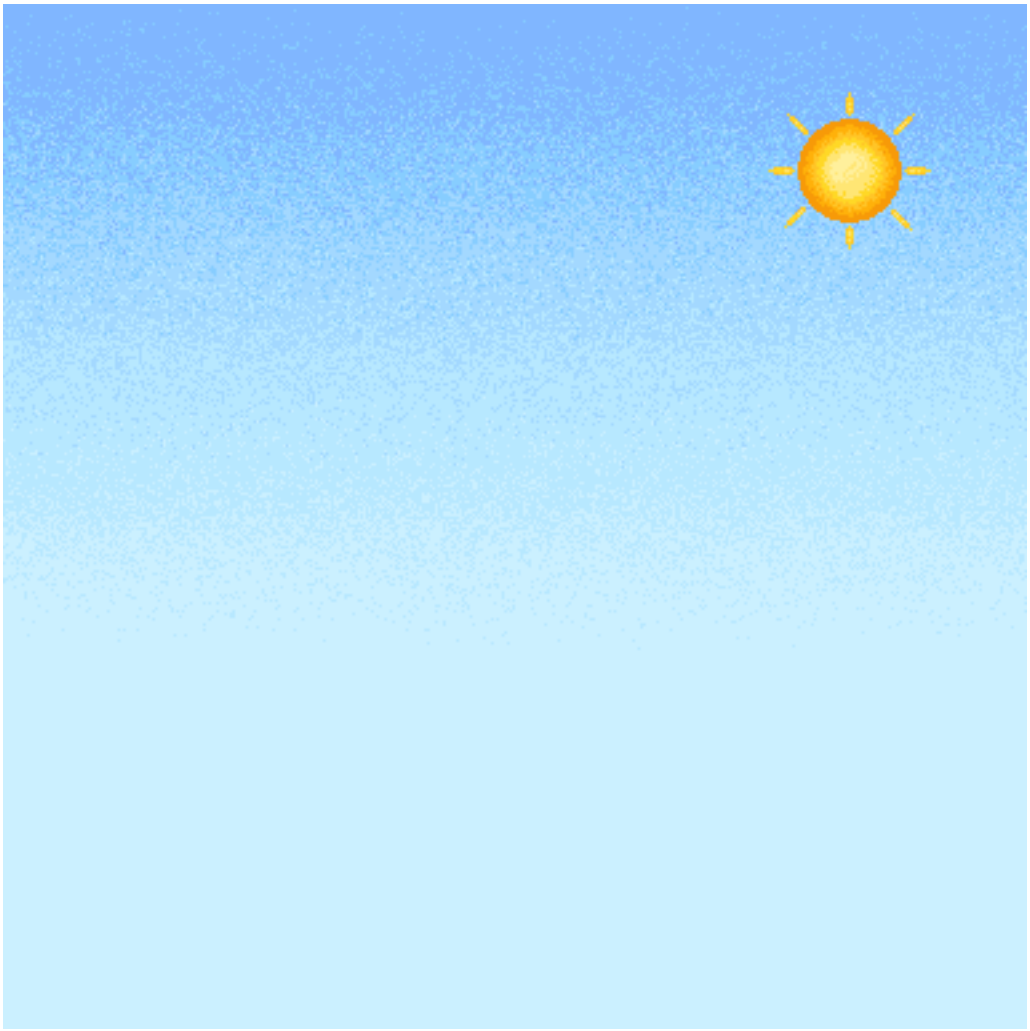
Player character sprite sheet for showing running, jumping, and swapping

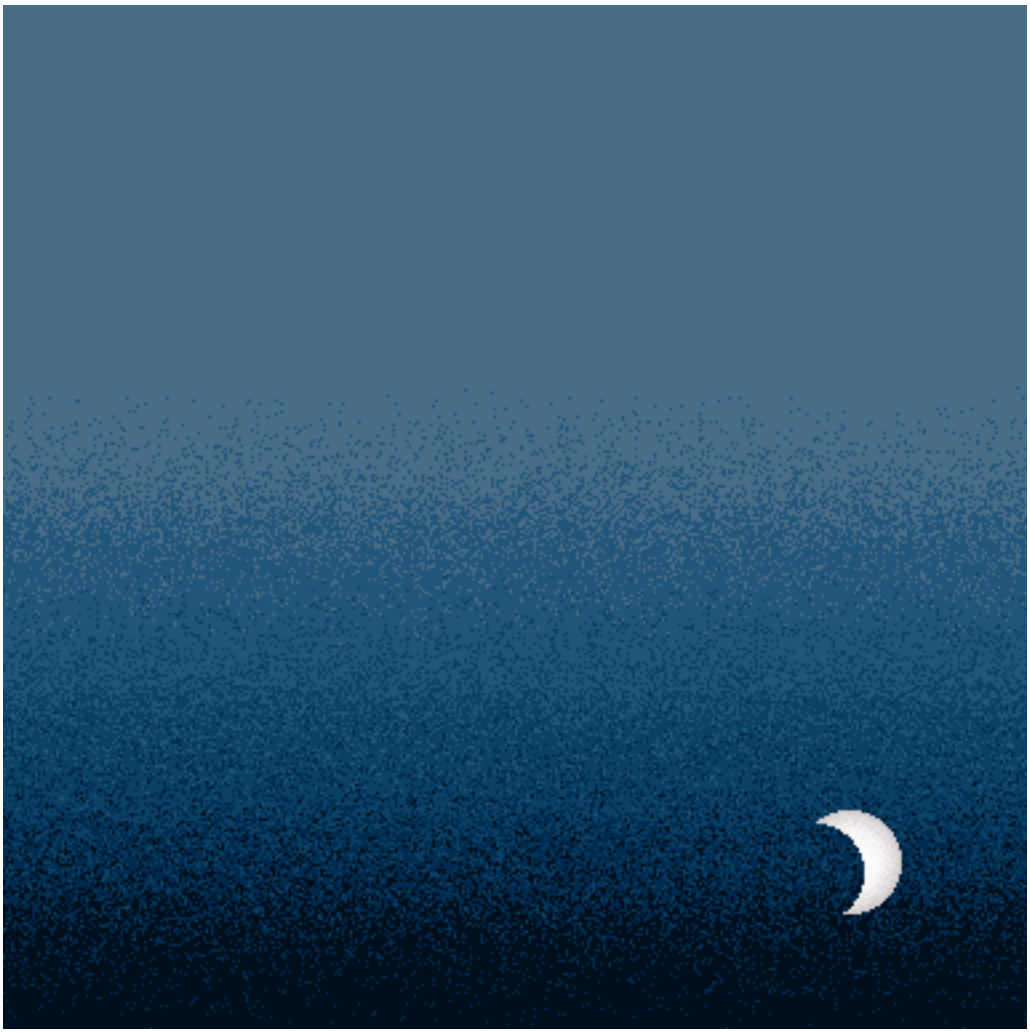
Terrain

Seamlessly tiling tiles. Currently we only have the ones for the upper half of the game world.



Backgrounds



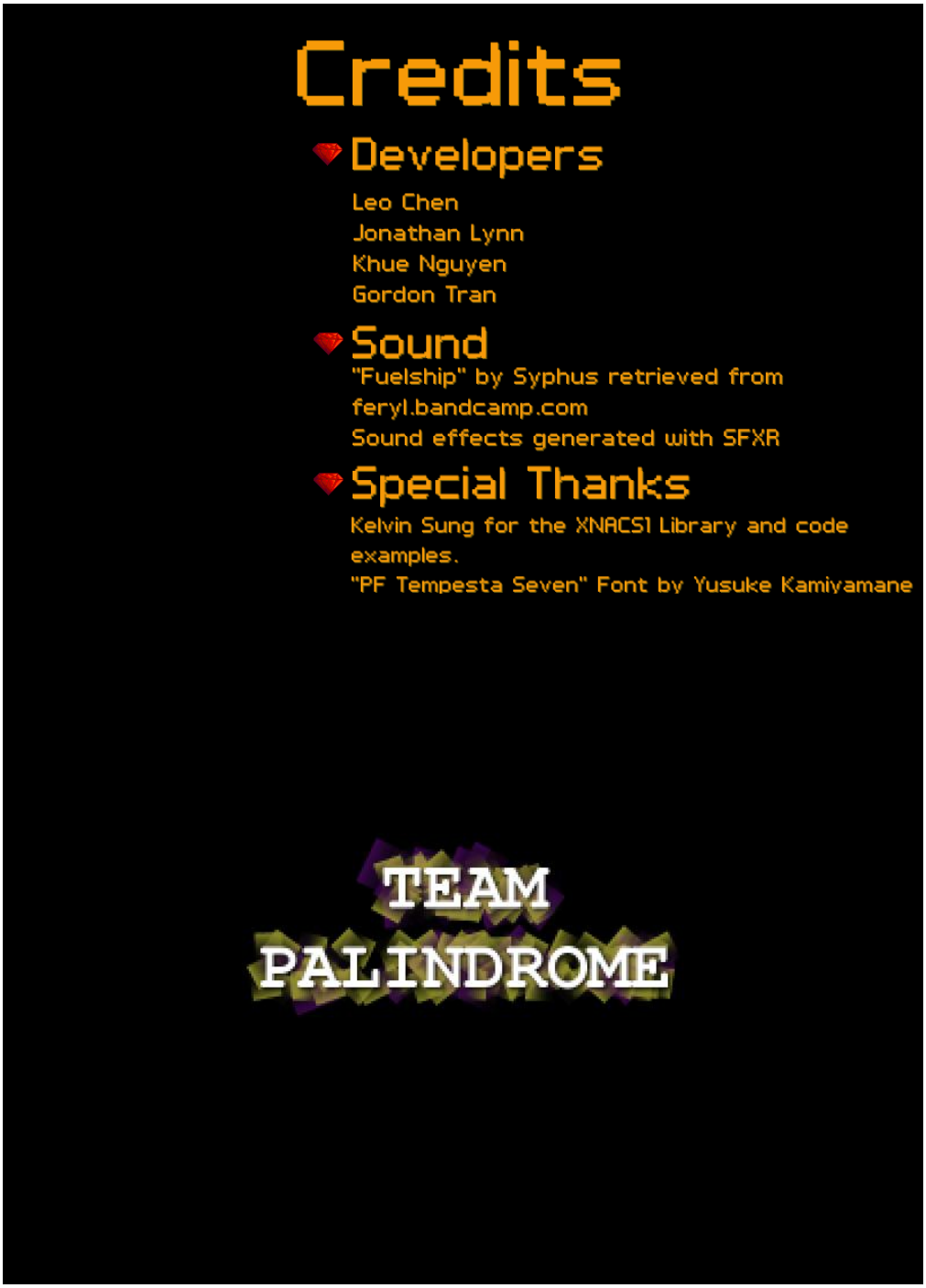


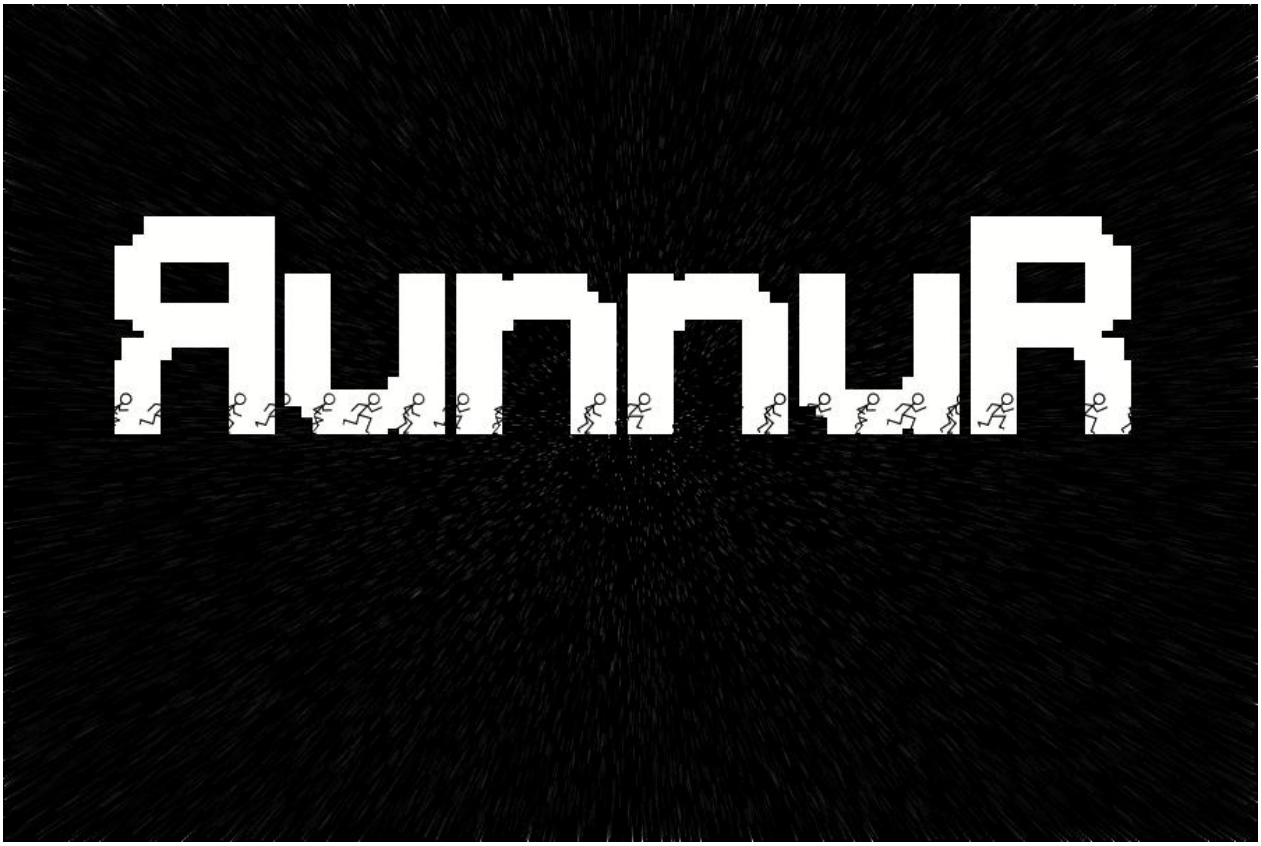
Particle effects

When the player dies, each hero is “pixelified” into a bunch of monochromatic blocks.

- Proposal: Color coordinate with hero color.

Splash Screens


Credits
Developers
Leo Chen
Jonathan Lynn
Khue Nguyen
Gordon Tran
Sound
"Fuelship" by Syphus retrieved from feryl.bandcamp.com
Sound effects generated with SFXR
Special Thanks
Kelvin Sung for the XNACS1 Library and code examples.
"PF Tempesta Seven" Font by Yusuke Kamiyamane
TEAM
PALINDROME



SINGLE-PLAYER GAME

Overview

Players are trying to escape an explosion of death by running away from it, even if it is a hopeless venture.

Details

Players are trying to survive as long as possible to make as high a score as possible. Successful bypasses of obstacles builds multipliers allowing players to rack up higher scores.

Story

No story, player are just trying to avoid death as long as possible

Victory conditions

No victory conditions. It's a given players will die eventually. Their goal is to rack up a high score.

MULTIPLAYER GAME

Overview
Players are trying to escape an explosion of death by running away from it, even if it is a hopeless venture. But they are also trying to stay alive longer than the other player.

Max players
Two players.

Other
The rest of the game is identical to single-player. Essentially it's the single –player with two players in the world instead of just one. Players can die due to death obstacles, or camera death if one player can run fast enough to get away from the other player.

Prototyping

Scoreboard
Demonstrate capability to record player high scores persistantly

Scrolling World Generator
Demonstrate capability to randomly and continuely generate platforms and backgrounds for level

Random Object Generator
Demonstrate capability to randomly generate obstacles that will pass through or be removed on conlission with equivalent/opposite state object

Player Control
Demonstrate capability to mirror player movement, swap states, and camera zoom based on player location.

RESOURCES & LINKS

Links to related resources
Design document based on this template:

HTTP://FORUMS.XNA.COM/FORUMS/T/229.ASPX

HTTP://INDIEPATH.COM/PUBLIC/DESIGNDOCUMENTTEMPLATE01.DOC

A few sections of the document are based on the design template in this book:

Fullerton, Tracy. Game Design Workshop, 2nd Edition: Elesvier Inc, 2008.

Sprites that were not custom created came from:

http://hamsterrepublic.com/ohrrpgce/Free_Sprites.html

Palettes used for the terrain tiles were retrieved from:
http://www.kawaiihannah.com/pixelart/pixeltutorials/view/tutorial/11/Palettes%20and%20Theme%20Generator/1

8-Bit Magic- A Module Chiptune Collection
http://feryl.bandcamp.com/album/8-bit-magic-a-module-chiptune-collection

SFXR
http://www.drpetter.se/project_sfxr.html