DS IV Design Document

Sign off:

Name	Date
Adam Bielinski	Friday, October 14, 2011
Tom Kenny	Friday, October 14, 2011
Sarah Marinoff	Friday, October 14, 2011
Shaughn Perrozzino	Friday, October 14, 2011
Nik Schultz	Friday, October 14, 2011

Contents

I. Introduction

This document contains information about the concept, story, gameplay, visual presentation, level design, game engine and market analysis for the side-scrolling puzzle platformer, Nomon.

II. High Concept

Nomon uses light-based mechanics and physics objects to create puzzles in which you must traverse to help your character escape. Much of our game involves revealing safe paths using our light mechanics. This game can be described as a puzzle platformer, since it will combine puzzles with exploration and jumping to avoid dangers.

Figure 1: Concept art depicting the world of light and shadows.

The main character is invulnerable as long as he within a shadow. As he progresses through the game, he has to complete the puzzles in one direction. Upon reaching the end of his journey, his element is then reversed and the player has to retrace their steps through the game now avoiding the shadows. The player is forced re-think the puzzles in order to retrace their steps successfully.

II.I Goals

The main character is trapped in this detail-less purgatory of a place. In the short term, the player's goal is to solve puzzles and complete each stage, deriving satisfaction from figuring out the game and how to manipulate its elements with simple controls.

The primary goal, however, is to escape – returning the character to the place he originated from. The player progresses through the game to find out and reveal more

about why he or she is there, exploring and finding reason bit by bit. The more thorough a player is, the more he or she may be able to discover.

II.II Challenges

To provide varied pacing and alternating challenges, the game will include both platforming and puzzle challenges. As the game progresses these simple puzzles will be combined, testing the player's abilities.

Platforming

Navigating a platformer is a fun challenge that tests the player's spatial reasoning and sense of timing. Including platforming mechanics allows the levels to flow in multiple dimensions and have a greater sense of speed. Some examples include:

- Jumping a gap
- Jumping multiple gaps
- Jumping from moving platforms
- Avoiding harmful objects/substances
- Avoiding enemy characters

Puzzles

Puzzles put a player's pattern recognition, logic and creative problem solving skills to the test. The following are examples of puzzle mechanics:

- Moving a light source to create new shadows and safe areas
- Interacting with objects to block/release light
- Changing state from light/shadow for more complex navigational challenges

Figure 2: Early concept mock-up for Nomon.
The light switch would shut off the light, allowing the player to pass the spiked platform.

II.III Actions

When the game loads, the player can navigate through the start-up menu, options menu or level selection menu, then start the game. During actual game play, the player can explore the environment by moving or jumping left, right and up, or falling down.The player can also interact with specific objects in the world. A combination of these actions will be used to solve puzzles and progress through levels.

II.IV Structure

This game follows a progression-based structure. Using basic controls, the player will complete levels of increasing complexity. The game will include a simple story, which will be revealed to the player as they progress through the levels. Though the player will be free to go back and replay levels they have already completed, new levels will be unlocked in order, creating a linear advancement through the game. There will only be one level of difficulty, which will increase in later levels.

II.V Design Philosophy

We are making this game to create an interesting light mechanic based puzzle platformer. Our overall goal during for development was to create this game based strongly around storytelling and gameplay interaction. For this reason we wanted to minimize the amount of coding and assets required to create the final project. In the end we decided to work with the Unreal Engine 3 because the the built in tools will provide a lot of this functionality minimizing our pipeline process. In the end, we wish to have a complete game that is both minimal and fun to play.

III. Story

Nomon features a subtle story, which will be interwoven throughout the levels. It is scalable depending on how much of the game is completed by the end of term.

III.I Overview

You are a featureless being trapped in a purgatory world of light and shadow. You must navigate your way through this world in an attempt to escape and move to your next plane of existence. You will rely heavily on the interactions between light and shadow to survive and navigate your purgatory. Eventually as you progress you will begin to discover more clues as to the reason for your captivity.

III.II Setting

The story is set in a mystical, limbo-esque universe. Distant objects are hazy and grey; things in the forefront are subject to harsh lights and shadows. Crumbling structures reminiscent of ancient Greek architecture are the foundation of this bleak, colourless landscape.

The post and lintel style of buildings present in the large stone pillars of Greek temples, will be a common sight, albeit decayed. Decorative friezes might also be present, perhaps giving hints into the story of the realm that the player has entered. Statues, if present will be worn almost featureless lending a light eerie touch. The shapes of these structures are iconic enough, that even without textures they will provide an interesting environment for Nomon.

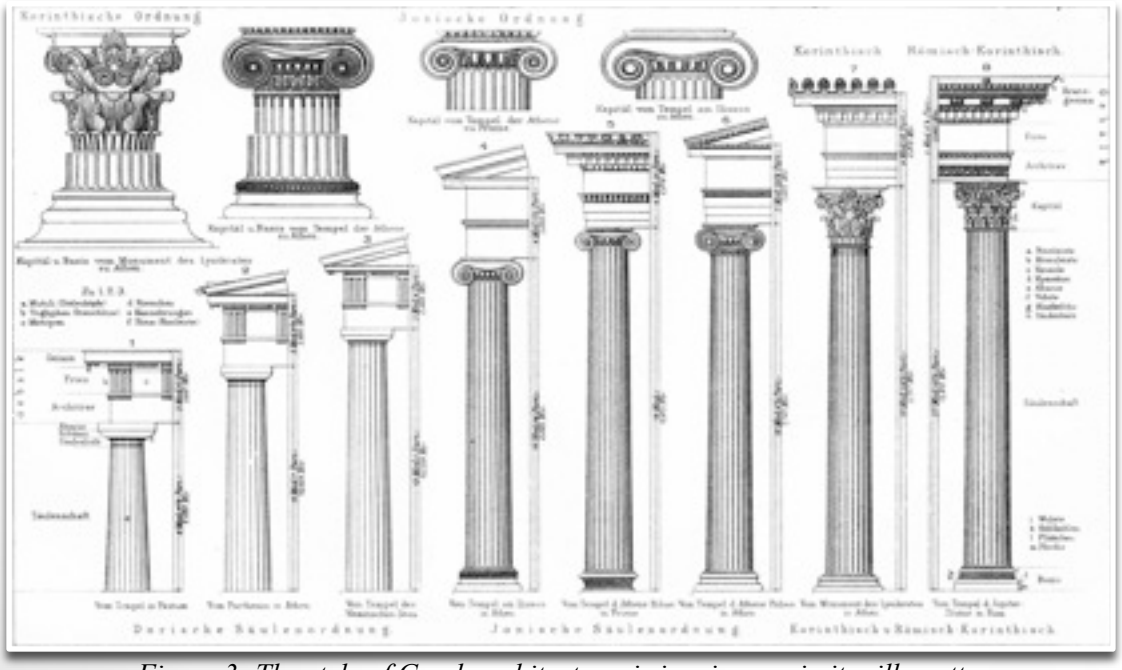

Figure 3: The style of Greek architecture, is iconic even in its silhouette.

See XI.I Environments for more reference images.

III.III Symbolism

Nomon

The title of the game is a variation on the Greek word for the arm of a sundial, gnomon. Its literal translation is ‘that which reveals’. Sundials use light and shadow to reveal truths, and so Nomon uses light and shadow to obtain safe passage and reveal the story. By dropping the G from gnomon we make our title into a palindrome, which further reflects how the levels can be played both ways.

Figure 4: An ornate sundial with Roman numerals on the face.

Dark, Light and Morals

The stereotypical perception of light and dark is that light means good and positive things, while dark means evil and negative things. This game serves as a subtle reminder that there is no true dark or true light – everything is shades of gray. What can be beneficial and what can be harmful depend entirely on your perspective; it won't be the same for everyone. If you get stuck in one point of view, try walking in someone else's shoes and see it their way.

Greek Symbols

Through appearance, style and content, the game demonstrates an ancient Greek influence. Greece had a major contribution on the formation of Western philosophy, especially with ancient thinkers such as Socrates, who believed in thorough questioning as a way to uncover underlying beliefs and solve problems. This game encourages the player to question their position and views in order to obtain a deeper understanding of him or herself.

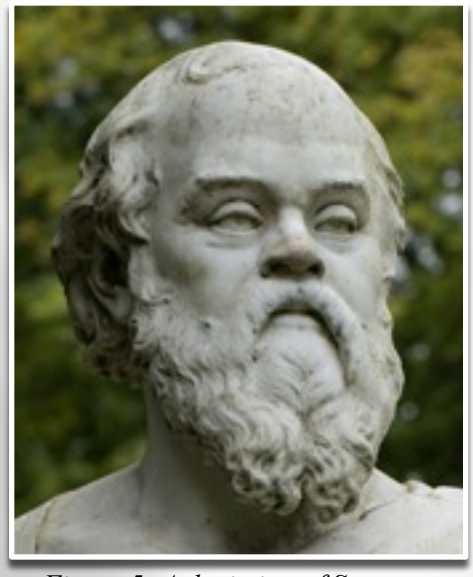

Figure 5: A depiction of Socrates.

IV. Game Mechanics

The game will be revolving around a few key concepts. Your current state (whether you are in shadow or light) is an important factor in the actions you can perform, and the state of your environment can alter the paths you can take.

Interacting with the game will be simple and straightforward, mirroring the controls of other games in similar genres. Players will be left to immediately focus on the aesthetics and puzzles of the game instead of learning new controls.

IV.I Player Interaction

Figure 6: The main input the player will use.

The player will experience the game through a single-player, avatar-based interaction model. The avatar will be controlled using the directional keys, or the standardized WASD layout that is already implemented into the game engine.

Table 1: Keyboard Controls

Keys	**Action**
A key, left arrow key	Move left
D key, right arrow key	Move right
W key, up arrow key, space bar	Jump
S key, down arrow key	Pick up or put down object

Using keyboard control standards and providing multiple key options allows the player to interact with the game however they are most comfortable.

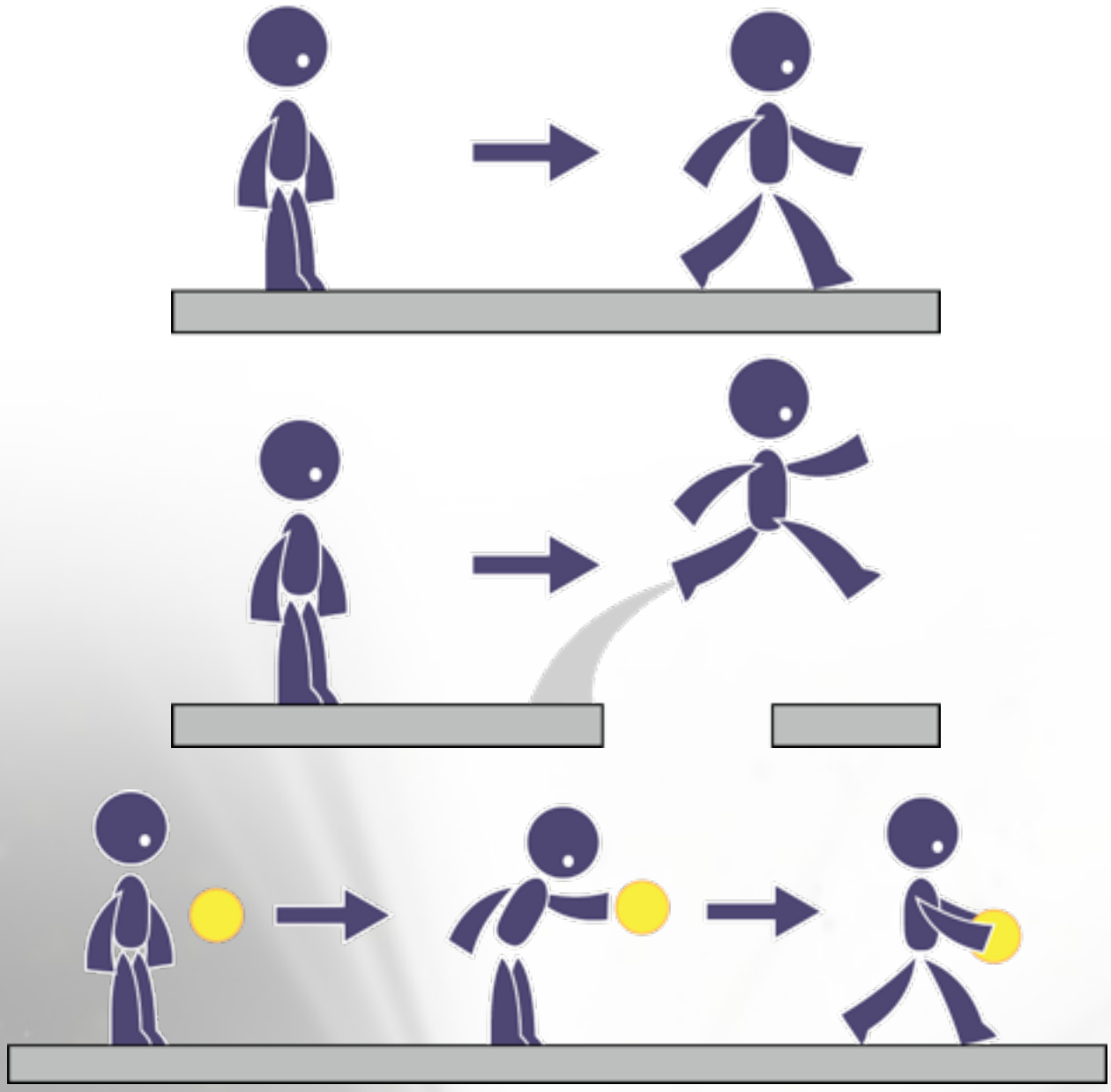

Figure 7: Basic character actions for moving, jumping and interacting with objects.

IV.II Constraints

To streamline the game experience, a lot of traditional player characteristics have been excluded. Instead of gradual loss of health and lives or a complicated inventory, a binary system will be implemented.

Table 2: Binary Game Components

Component	Rules
Health	Touching a hazard (enemy or otherwise) will destroy the avatar. This returns the avatar to the beginning of the stage, or most recent checkpoint.
Lives	Infinite lives allow the player to retry the stage indefinitely.
Time Limits	The player will have infinitely long to complete each stage. This leaves him/her free to consider each move as well as explore the environment fully.
Inventory	The player can pick up only one object at a time. There is no inventory in the traditional sense.
Movement	The player can move left or right. The player can jump straight up, up and to the left or up and to the right. The player can fall down, down and to the left or down and to the right. All movement occurs within the X-Y axis.

IV.III Enemy & Puzzle Types

Nomon features many enemies and puzzles of varying difficulty for the player to encounter and overcome.

IV.III.I Enemies

Enemies will be simplistic, and more of a hazard then a conscious entity. They appear as leftover statues, perhaps the remnants of others like you. They cannot chase the player and cannot be directly defeated. One type of enemy may simply walk back and forth, patrolling an area. The player is forced to avoid it.

Enemies may be frozen until light is shone upon it or off of it, as the case may be. It then would come alive and begin patrolling as normal. This may be a positive or negative to the player. In some instances, this could reveal the path to the exit.

Frozen enemies may trigger some other event in the level, such as collapsing a bridge or turning on a light, but this is an advanced technique that may not need to be implemented.

Some enemies, when unfrozen, may become frozen again when the light that thawed them out is turned off. When frozen, these enemies could be used as a platform to reach an otherwise unreachable place.

Specific types of enemies include:

- Active small stationary
- Active small patrolling
- Active large stationary
- Active large patrolling
- Frozen small stationary
- Frozen small patrolling
- Frozen large stationary
- Frozen large patrolling

Figure 8: Golems bar the player's path when active.

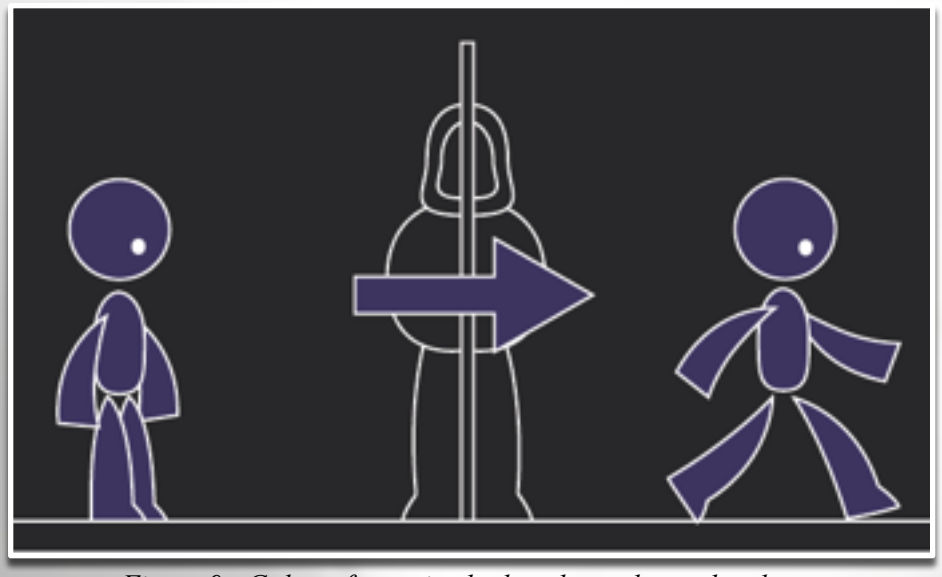

Figure 9: Golems frozen in shadow do not harm the player.

IV.III.II Puzzles

The level as a whole will be the puzzle, with various components that must be manipulated before the player is able to progress. Some example puzzles include:

- **Spikes & Shadows:** While in shadow form, spikes cannot harm the avatar as long as they are in the shadows as well. The player will have to manipulate light sources in order to keep him or herself safe from harm.

- **Moving Platforms:** Some objects will be activated or deactivated in the presence of light - or lack thereof. The player will have to manipulate light sources in order to build a path from one end of the level to the other.

IV.IV Levels

Level design will be very thorough and conscientious. Each level must be crafted carefully to provide the appropriate level of challenge and guide the player through the game, revealing story at an appropriate rate to keep the player motivated. Each level must also be designed with palindromes in mind, as they should be playable in either direction with both dynamics of the game – light and shadow.

IV.IV.I Level 1 - Start Screen/Basic Tutorial

This level will showcase the games aesthetics. Since it is the starting screen, it will need to be immediately obvious that the player can move. Only one path will be available. The title will be shown as the player walks and explores, with some clues relating to the story.

In this level, the player will learn simple movement and jumping mechanics, to get a feel for the controls and how the game responds to their inputs. At the end of the level, a simple puzzle will require them to move a light from one location to another. There are no hazards, though a light may be placed to introduce the player to state changing effects.

IV.IV.II Level 2 - Advanced Tutorial

This level is the most important step in level design. It will need to teach the player that they are vulnerable when lit up – but due to the nature of vulnerability, will need to kill the player. Many games approach this differently, but a common one is to simply show an obviously different element (spikes or a walking enemy) and force the player to perform an action to avoid it. This will require iterative development to prevent player frustration.

In this level, the player will refine their platforming skills with more complicated jumps involving moving platforms. The hazards will be introduced in form of spikes.

IV.IV.III Level 3 - Watch Out

This level introduces stationary enemies such as living statues; the player will explore methods of "defeating" or bypassing them. Portable light sources will be emphasized at this point. This level will also reveal a key story point, which will encourage the player to press ahead through the difficult challenges to come.

IV.IV.VI Level 4 - Perplexing Complexity

From level 4 on, the difficulty will peak. This level combine all the aspects of the of the previous levels, and twist them into new puzzles. By mixing the familiar elements there will be various opportunities to create new challenges.

IV.IV.V Level 5 - The Turning Point

This level will mean something different depending on whether backwards-playable levels actually work. If the game only runs in one direction, completing this level and becoming a being of light will signify a victory and the end of the player's journey. However, assuming backwards-playable levels will be fully implemented within the time constraints of the project, this level will only be half a victory. The player will finally understand the whole truth about where the character is stranded and what has happened, but in order to find out why, they will have to retrace their footsteps back to the beginning, armed with the power of light in place of shadow.

IV.IV.VI Level 6 - Resolution

This level is accessible only after completing levels 1-5 and levels 5-1. The ultimate challenge with more enemies and hazards, complicated platform mazes, etc., will lead the player to the final resolution of the story and game.

V. Presentation

Presentation is very important to the game as it will help govern many aspects of the final product. The visual style will be very important to the overall mood and atmosphere present in the game. Many other aspects of the environment will also tie into this as well since it is important to have cohesive design. All these elements will be carefully designed so that final product is fluid and polished.

V.I Visual Style

While playing the game the player should feel immersed in the bleak environment that is the world of Nomon. The design of the world will be minimalistic in detail to allow the game to focus on specific game mechanics and hazards. Shaders will be applied to scenery to emphasize edges, while depth of field will blur distance objects.

Lighting and particle effects will play a huge role in the visual presentation of the game. Startling bright lights will swathe some sections of the stages, while others will be cast in dark shadow. As a shadow in shadows, the player avatar will be surrounded by a swirling deep purple aura, indicating the power it holds in its element. This aura will fade in light however, showing the character's vulnerability. In light form, the character will emit a pale yellow aura while in bright light, while fading in the shadows.

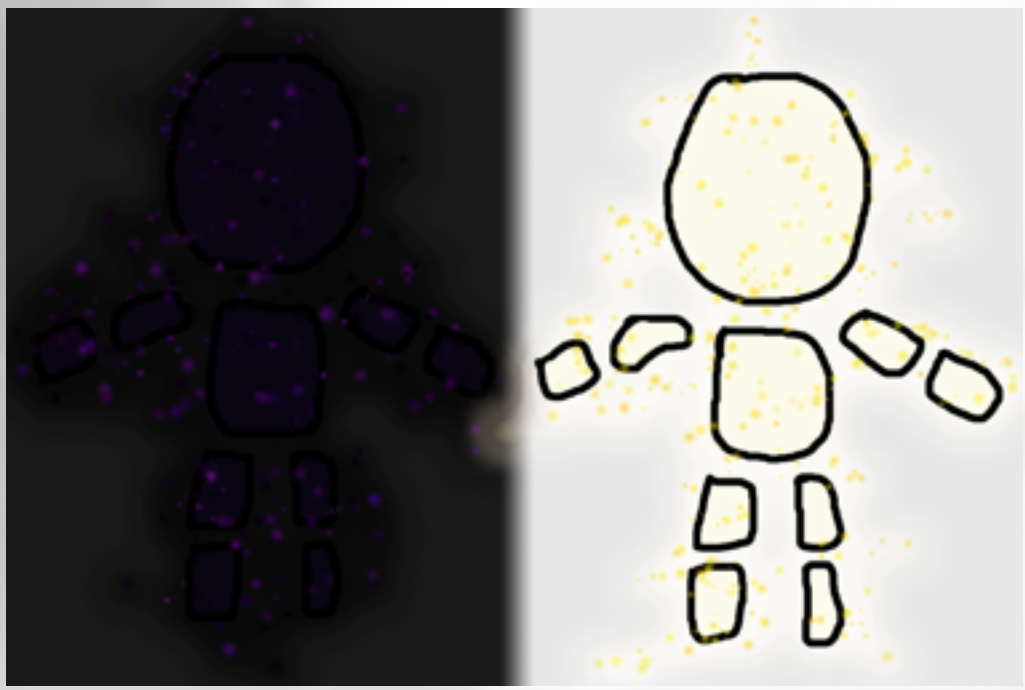

Figure 10: Concept art of the player avatar and auras.

V.II 3D Game Environment

Level environments will be composed of fairly low detail models and meshes. The game will leverage a fairly artistic shader to create a high contrast shadowy world.

A full list of components is as follows:

- Environment
  - Flat background
  - Near and distant scene objects
  - Collidable floors and walls
- Hazards
  - Moving platforms
  - Spikes
  - Moving and stationary enemies
- Interactive elements
  - Lights
  - Lit areas
  - Shaded areas
- Your character
  - Avatar in Shadow or Light form, depending on the player's progress

Each level will be enclosed by walls and other architecture, ensuring that the player cannot leave the game area.

V.II.I Perspective

The game will be played from a third person perspective, with a side scrolling view of the environment. The camera will follow the player automatically, zooming in and out along the z-axis depending on which area of the level the player is occupying. This way the player/level interactions will be easy to illustrate and the complexity of the puzzles will be reduced.

V.III User Interface

The UI used for Nomon will be very minimal, if not almost non-existent. For the most part the player will rely on game actions instead of specific message screens. For example,

instead of a death screen the player will just reappear at the last checkpoint or beginning of the level in a puff of smoke.

Game menus will also be reduced to their minimum, where required.

V.III.I Start Screen

The start screen will be minimalistic, showing the game logo then fading into the game. Instructions appear as the player begins to play (e.g. Use Arrow Keys to move).

Figure 11: Simple wire frame prototype of the start screen this will fade to actual gameplay.

V.III.II Pause Screen

The pause screen will consist of a simple set of options, floating in front of a blurred image of the game state. At most, the options will Resume, Restart Game, Sound Toggles, Quit & Help.

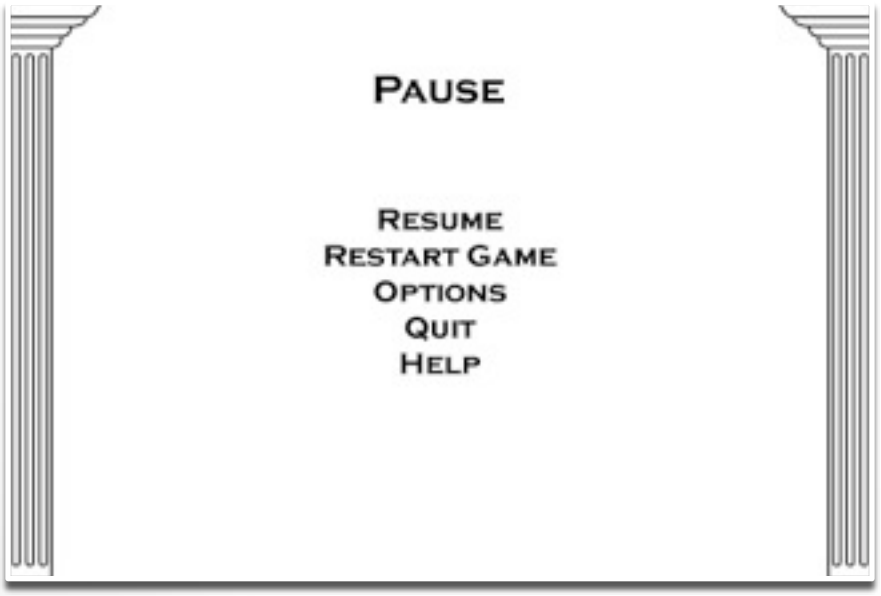

Figure 12: Simple wire frame prototype of the pause screen.

V.III.III Ending Screen

This screen will be shown when the player finishes the game. It will include a brief wrap-up of the story.

Figure 13: Simple wire frame prototype of the end screen.

V.IV Interface Flow

Since this is a platforming game, the interface will consist of the in-game camera for most of the time the player will be playing. Aside from the pause menu, the gameplay will flow uninterrupted from the start, level to level, all the way through to the ending.

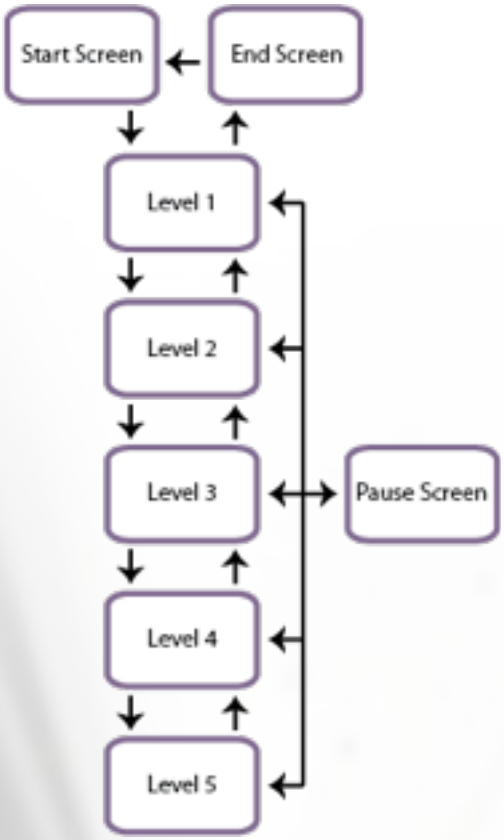

Figure 14: Depiction of game flow.

VI. Audio

Audio will be a last-priority in this project. We will not be spending much time on this topic, but may get our sounds outsourced.

VI.I Sound Effects

Sound effects, such as user feedback for player actions, will be used minimally to avoid annoying the player. They will be quiet and muffled, reflecting the dreamy environment.

VI.II Background Music

The emphasis for the soundtrack will be on moody ambient quality, bass-heavy songs with percussive accents. The background music will either be acquired via copyright-free resources or requisitioned from a third party. A musician and friend of the team has already been contacted and has agreed to assist in making a soundtrack.

VII. Prioritized Feature Set

In a project as large as a game with a limited development timespan, features must be prioritized in order to create a successful, satisfactory project.

VII.I Must-Have

- **Player avatar:** the player is able to manipulate an onscreen avatar to move, jump and interact with objects through the use of a keyboard
- **Invulnerability mechanic:** the player, made of shadow, is invulnerable until in the light
- **Environmental hazards:** the player can die when in contact with spikes, flames, etc.
- **Start and ending screens:** to introduce our game and say goodbye to the player

VII.II Should-Have

- **Enemies:** moving environmental hazards, animated flames
- **Multiple Levels:** the game should have at least 5 levels with different puzzle elements
- **Movable light sources:** allowing the player to further interact with the light dynamic

VII.III Nice-To-Have

- **Transition from Shadow to Light forms:** at some point in the game, the character should become light, and have all the previously taught mechanics reversed
- **Moving environments:** moving platforms, tilting blocks, swinging lights, etc.
- **Story telling elements:** such as signs, words written on walls, level transitions, symbolism, etc

VIII. Platform

Because the game is being developed using UDK, it is intended to run on Windows machines. The controls are being adapted for keyboard use, so a PC will be required.

VIII.I Minimum Hardware

- **Operating System:** Windows XP
- **Processor:** Dual Core Intel Processor
- **Memory:** 2GB
- **Graphics:** 8800GTS or greater
- **Hard Drive:** 3GB (approximate estimate)
- **Sound Card:** Any

VIII.II Recommended Hardware

- **Operating System:** Windows 7
- **Processor:** Quad Core Intel i5
- **Memory:** 4GB
- **Graphics:** GTX 260 or greater
- **Hard Drive:** 3GB (approximate estimate)
- **Sound Card:** Any

IX. Game Engine

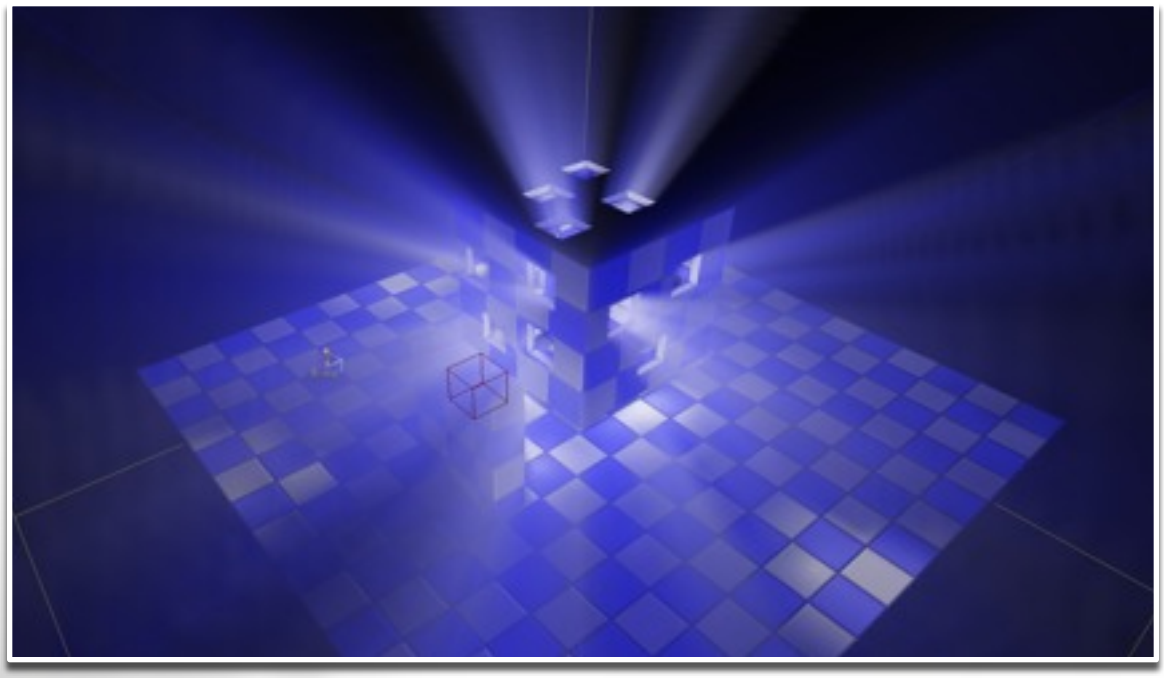

Figure 15: Testing lighting effects using the Unreal Development Kit

The platformer toolkit provided by UDK will be used to create this game. It provides the following features:

- **Lighting:** Stunning real-time lighting effects will be used throughout the game both to light the scene and assist with the light/shadow dynamics of the game.
- **Physics:** Avatar movement and collision detection will be handled automatically by the engine, based on our level design. Collision tests for enemies, switches, and objects are also automatically supported.
- **Model Loading:** the engine has code in place for all asset management, including animated models and their textures.
- **Shaders:** Stylized shaders can be applied by the engine in post-processing.
- **Level building:** The UDK supports a very complete level designer.
- **Sound playing:** Sound and music can be important parts of gameplay, and the UDK has sound support built-in. Developers only need to supply the effects and customize them in the UI.
- **Animation:** Again, the UDK supports a very complicated and complete animation system.
- **Controls interpretation:** Luckily, developers don't need to code low-level system drivers for the keyboard. The UDK and Windows do this automatically.
- **Menu screens:** Although Nomon has only one menu, menu mechanics will still come into use when the game is paused, for quitting or adjusting settings.

Technologies that will have to be implemented:

- **Light/shadow detection:** The game will need to detect if the player is in range of a light source. By casting a ray from all nearby lights towards the player, developers can test if the ray is able to strike the player without a collision with the terrain. If it collides, one can determine that the player is lit.
- **Object carrying mechanic:** Certain objects need to be able to be carried. Developers need to simply code in a few triggers and have a supporting character animation to enable this.
- **Enemy movement:** Enemies will be patrolling levels at certain points. By leveraging brushes, one can constrain their movements and have them only patrol a small area.
- **Enemy as a platform:** When enemies are “inactive” they can be used as platforms. This will simply have to be an internal switch of some sort.
- **Light/shadow switching:** Lights in the UDK can be turned on and off. This will affect gameplay, and thus will need to have special attention.

X. Market Analysis

Awareness of target audience and the competition for this audience is key in order to implement a successful marketing strategy.

X.I Target Audience

The puzzle based side scrolling gaming connoisseur of course! What's the target audience for the Humble Indie Bundle? That's our audience as well.

Generally we do not want exclude anybody from playing our game, however we feel that the game will naturally target a specific audience. We want to target the young adult gaming market who are above the age of 15. These players can be anybody looking for simple casual game to hardcore players who enjoy solving puzzle based games. The players will be looking for a quick result based gaming experience. The players will be able to sit down and complete the game in one sitting. A few examples of these players could be:

- Students and young professionals
- Adults
- Anyone who enjoys solving puzzles

X.II Competition

From the earliest of platformers such as Nintendo's Donkey Kong, to more recent games such as the popular Cave Story the genre is and remains a staple in video games. While at their core, platformers all share the same gameplay dynamic, many games have started to incorporate puzzle elements to differentiate themselves from the crowd. The sheer number of games in this genre make it more difficult to penetrate the market without a sufficient hook.

There is a reasonably large selection of games on the XBLA, it will be challenging to set our game apart from the others due to sheer number. There are also several games that fall into the Puzzle/Platformer genre as well, though they do not use the same puzzle dynamics as our concept they are still our competition as we need to set ourselves apart from them.

Limbo

Figure 16: Limbo, a recent XBLA release has an eerie atmosphere that is completely monochromatic. Monsters lurk about as angry silhouettes.

Limbo is a puzzle adventure platformer that uses a very simplified, but unique art style. The puzzle platforming aspects are all physics based, where the main character searches for his lost little sister. Limbo shares many aspects that we are trying to accomplish with our game with a simple art style, minimal story element and unique puzzles. The game has garnered rave review among game critics and gamers alike.

Braid

Figure 17: Braid uses a unique painterly style of graphics combined with classical music. It has a warm and imaginative atmosphere.

A now somewhat famous puzzle platformer with innovative problem solving mechanics.The graphics style also set it apart from the competition, giving off a painterly look. The story was also very unique in the way that it was told, it caught a lot of attention for it. Braid's story was written to make sense not only forwards, but in reverse much like the one for Nomon. Only upon completion of the game does the player fully understand the depth of their actions. The look and feel of Braid has been emulated by many other games since.

X.III Marketing Strategy

Interesting and intriguing marketing designed to catch the target players attention and get them interested in our game. Ideally we will be appealing to gamers who enjoy puzzle based challenges and gameplay. We want to have people motivated to solve the games puzzles and progress through the game.

X.III.I Website

The primary marketing hub for Nomon will be its public website, which will contain recent information about the game, art and videos and other multimedia. The website will be updated periodically as development on the game progresses, in order to give potential players interesting details to look forward to.

X.III.II Social Media

To keep up with current web trends, social networking tools such as Facebook, Twitter and Reddit will be used to provide quick updates, more photos and allow fans of the game to comment and communicate directly with the developers.

X.III.III Print Media

To advertise the game in more traditional media, as well as give fans a take-away item, print products such as fliers, posters and business cards will be designed and distributed. Putting this type of media around campus and in similar locations will reach out to the target audience and direct them to online sources of information. Simple, flashy designs will be used to grab attention, leaving verbose details to the website.

XI. Reference Images

Many visual references have been gathered in order to design Nomon.

XI.I Environment

Figure 18: Objects in the distance will be lost to the colourless haze of limbo.

Figure 19: Crumbling columns with stones scattered throughout a fairly empty area.

Figure 20: inspiration for our level designs, things are very square and symmetrical

Figure 21: More architectural details

Figure 22: The interplay between light and shadows is an important environment detail.

XI.II Character

XI.II.I Player Avatar

Figure 23: Munny dolls provide a simple yet interesting humanoid shape.

Figure 24: Rayman's detached limbs streamline the animation process. Fewer joints will allow lower poly models, which will translate to higher performance.

Figure 25: A typical stone golem, constructed of rock chunks, with an eerie light in its eyes that speaks of life and knowledge.

Figure 26: A stone golem with floating limbs, very similar to our design

XI.II.II Enemies

Figure 27: The "Armos" from the Legend of Zelda series, appear as statues until disturbed. Upon being awakened, they chase after Link (the player) within a certain radius.

XI.III Lights

Figure 28: Lights and shadows make a delicate balance in every environment.

Figure 29: You can take the light into your hands.