Pretentious Games Presents:

Hello World

Design Document
# Table of Contents

1. **Team Members**
2. **Design History**
3. **Vision Statement**
4. **Audience/Platform/Marketing**
   a. Target Audience
   b. Platform
   c. System Requirements
   d. Feature Comparison
5. **Gameplay**
   a. Overview
   b. Detailed Description
   c. Controls
   d. Scoring
   e. Interfaces
   f. Flowchart
6. **Storyboard**
7. **Characters**
   a. The Child (narrator)
   b. Cosmonaut
   c. Depacifier
   d. Derp Monster
   e. Ghost Monster
   f. Flying Monster
   g. Character Types Summary
8. **Story**
   a. Synopsis
   b. Complete Story
   c. Backstory
   d. Narrative devices
8. **Media List**
   a. Character Assets
   b. Planet Theme Assets
   c. Music
d. Sound Effects

9. **Tech Specs**
   a. Development Platform
   b. Tools
   c. Challenges
   d. Delivery

10. **World**
    a. Planets
    b. Planet Themes
    c. The LAMP
    d. Terminals
    e. Artifacts
Team

Programming:
Logan Freesh
Alan Haug
Bryan Harbich
Nick Jones
Zach Lindblad
Michael Olson
Eric Schmitt
Chris Ueda

Sound:
Eric Lawson

Art:
Chelsea Cramer
Amanda Ross
Sally Su

Writing:
Camila Dixon
VISION STATEMENT

Go back to the arcade to explore planets, flip some switches, and bring light to the universe.

'Hello World' is the first program anyone writes, it's the beginning, the start of a into an incredible universe of unimaginable size and scope. Hello World the game goes back to the roots of the entire game industry, the arcade. It goes back to the fast, single session style of play to tell a story of birth and discovery through symbolism and metaphor, but Hello World goes beyond this. By bringing in few choice multisession elements, we can frame this abstract experience in a concrete story line, as well as soften the harsher arcade aspects for the modern player.

As the cosmonaut, you land on a planet, explore a maze inside, flip a switch at the center, and escape back to his ship before the planet turns into a star. All of this happens in a procedurally generated universe the player can non-linearly explore. Each planet lit expands the player's explorable space, pushing them further into deeper reaches of the galaxy. This progression of play is composed of two linked wholes; first, overworld travel and landing in you ship, and second, exploration and racing back to your ship on foot. The former takes its cues from classics like Asteroids, Lunar Lander, and most importantly Gravitar, while the latter more resembles the forgotten gems of Major Havoc and ABUSE, with a little bit of Pac-Man thrown in for good measure. One of our greatest challenges, and greatest aspirations, is to make these wholes work together seamlessly, to create one experience. With a smooth dynamic camera, and similar simple controls, we think this goal is attainable.

During this experience, the Cosmonaut collects trinkets. Animals, plants, artifacts, all get beamed back to your ship once you reveal them. These trinkets present the opportunity for the player to take the initiative between play sessions to read about these elements, and learn more about the universe the Cosmonaut inhabits, as well as the Cosmonaut himself. This way we don't have to force story or narrative upon the player. Just like in real life, if you want to understand what has happened, what is happening, and what will happen, you have to go on your own and read. Over time a parallel story is slowly told, one which brings together our themes and
symbolism.

You find that in this space, planets are ideas. Ideas which once understood, unlock other ideas for exploration. Once an idea is lit, it can't be re-explored. Once you know something, you know it, and it can never be forgotten -- a theme further driven home by our darkness and occlusion mechanics. Once the Cosmonaut's eye-lights reveal anything, it stays revealed until the end of his game. The Cosmonaut is curiosity in its child-like state, and his power comes through what his eyes see: monsters become animals, dark, lifeless planets become beautiful landscapes, and the void of a universe you start with is slowly filled.

Too many of today's 'Art Games' take on a depressing message, to the point where it has stigmatized the genre. The pursuit of "a game that makes you cry" has made us forget the breadth of human experience. *Hello World* is a celebration of humans’ ability to grow, our natural urge to explore, and the beauty of understanding.
Audience, Platform, Marketing

Audience:
Hello World will cater primarily to gamers age 20-40 who remember and enjoy the classic arcade gaming experience. More casual gamers may find the game enjoyable as well for its subtle story elements and over-arching progression system. The basic game concept will be simple enough that anyone can pick it up and learn to play, but the difficulty increases rapidly and players will soon find themselves challenged more and more as they progress through the universe.

Ideally we hope this game will cater the same kind of audience arcade games did in their heyday. Very few people are very good at the arcade games we draw from, but nearly everyone can play them, and did play them. By sticking to simple mechanics, and short play times, we can minimise frustration and recreate that popcorn experience seen in games like Geometry Wars.

Platform:
Hello World will be playable on Mac, Linux, and Windows PC.

System Requirements:
We are aiming for the system requirements to be very low. Hello World is not using 3D, and there won't be any complex collision or physics calculations to be done, so it should be capable of running on low to average spec computers.

Marketing:
We plan on selling the game through digital distribution services such as Steam or Desura. The current price point we have in mind is from two to five dollars. This price is in line with other independent games available on these platforms. On Desura the game will be available on Windows, OSX, and Linux, while on steam the game will be available for Windows and OSX.
Since we have no real advertising budget our primary method of promotion will be independent game web blogs and forums like Playthisthing, Rock Paper Shotgun, IndieGames, Tigsource, and Gametunnel. This kind of ‘grassroots’ promotion has worked for other games in our field, like Minecraft, Terraria, Dungeons of Dreadmor, and Toki Tori.

Beyond that we will also submit our game to Indiecade and Independent Game Festival (IGF). Hello World’s striking visuals and simple mechanics allow it to be noticed quickly among other similar arcady games we will be competing with.
Gameplay

Overview:
Hello World exhibits a number of different kinds of gameplay, all seamlessly integrated into each other. Specifically, the gameplay can be divided into three major phases: interstellar travel, planet exploration, and planet escape. The player progresses through the game by travelling through space to a discovered planet, exploring that planet until they discover and flip the switch at the center, and then escaping the planet before it is converted into a star. In doing this, the player progresses through the various styles of play offered in Hello World, seamlessly transitioning from one to the next to create the feeling of a single experience or adventure.

Detailed Description:

Planet X:
The player begins the game as the Cosmonaut on the surface of his home planet, Planet X. Planet X is a small, mechanical looking world made up of relatively few (3-5) internal layers, where the player has access to any collectibles or checkpoints acquired in previous play sessions. Planet X is also devoid of most game objects found on other planets, including enemies, data terminals, artifacts, and batteries, which are discussed in more detail below. As they descend the layers of their home planet, players will find stations where they can access their collections. These include a data terminal where the player can view collected story bits, a collection room where the player can see monsters and artifacts they have collected from various world, and a set of warp terminals to transport them to any space stations they have discovered in previous play-throughs, which act somewhat like checkpoints in space. Assuming the player has yet to acquire any of these elements, or has no interest in viewing or using them, they can begin their journey through space by boarding their ship, the Lamp, on the surface of Planet X and blasting off into space in search of their first unexplored planet.

Interstellar Travel:
Once the player has boarded the Lamp from the surface of a planet or space station, they will begin controlling the ship instead of the Cosmonaut using simple controls to activate the thrusters and adjust the angle the Lamp is travelling. Boarding the Lamp will also give the player access to a data terminal which will store any story bits they have acquired on various planets. As the player gets farther from the surface of the planet (or soon-to-be star), the camera will slowly zoom out and the planet will shrink in size.
until a top-down overview of space is achieved. In this view, the player will be able to see a vast expanse of space through which to navigate the Lamp, including any other planets that are currently explorable, as well as a small minimap in the corner of the screen.

**The Minimap:** The minimap available to the player during interstellar travel is one of the only things in the game that is truly persistent the whole way through. While most things get reset after a game over, the minimap will always distinguish which planets the player has already been to and which parts of space they have already explored. It will even denote planets that contain story bits, if the player has discovered them previously. In this way, the player can see the true extent of their progress any time they are travelling through space in the Lamp.

Initially, all but a few (1-2) planets are shrouded in the darkness of the universe, and are therefore not explorable, or even visible to the player. These planets become available to the player only when another planet in their vicinity has been converted into a star, thereby lighting up that portion of the universe and the planets therein. Planets that are converted into stars will generally reveal two or three planets in their vicinity, though these numbers vary slightly depending on the converted planet. In this fashion, the player progresses deeper into space, bringing light to the universe along the way. Approaching a new planet in the Lamp will function similarly to leaving one in that the camera will slowly zoom in as the player gets closer to the planet until the planet has reached it full rendering size, at which point the player must successfully land the Lamp somewhere on the surface. A this point, the interior of the planet, which is rendered to look like the rest of the surface from the space view, transitions into a black mask that covers the interior maze, leaving only the outermost layer (the surface) rendered.

**Exploring a Planet:**
There are two types of worlds the player can encounter in their adventures through space: space stations and normal planets. Space stations resemble the normal planets, except with a more mechanical look and none of the inner planet objects. Should the player find a space station, they can activate the warp terminal in the station, allowing them to warp to and from Planet X. Every planet (not space station) in Hello World consists of a internal rotational maze that the player must navigate until they reach the center. Once they reach the center, they must flip a switch to initiate the planet’s conversion into a star, and then escape before the conversion takes place. Initially, the interior maze of each planet is covered with a black masking mechanic, effectively shrouding the inner maze in darkness.
The player can reveal the maze using the Cosmonaut’s flashlight, which projects light a short distance in front of the Cosmonaut at all times. When the flashlight passes over any portion of the planet that is masked, the mask is removed and that part of the maze is permanently visible. Using this mechanic to travel deeper into the maze, the player may encounter various objects within the planet, namely monsters, batteries, artifacts and data terminals with story bits. Artifacts and data terminals mostly have to do with the story line, and so do not affect the gameplay much. Finding an artifact will add it to the player’s collection room for later viewing, and finding a data terminal will reveal a story bit to the player, which is downloaded to their ship and can be viewed either while on board the Lamp or on Planet X. These objects are not present in every planet however, so the player is less likely to encounter one of these than a monster or battery, which are in every planet. Batteries are what allow the player to fight various monsters with the Cosmonaut’s flashlight. When the player runs into a battery, the Cosmonaut’s flashlight will be temporarily “supercharged” and will be strong enough to pacify any monsters it happens be shine upon during that time.

*Behind the scenes:* Initially, Hello World used a timer to limit the amount of time a player could spend inside the internal maze of a planet that was supposed to represent the “power” left in the Cosmonaut. When the time ran out, the player was transported back to the surface with a fully refilled power pool to start again. In this case, the batteries simply added time to the initial pool that the player started with, so collecting them just allowed for more time to explore the planet on the next run. However, after playtesting a prototype with this mechanic we found that the timer inhibited the player’s ability to explore the planet fully, which is the meant to be the most prominent theme of the game. It also proved extremely frustrating to the player, so much so that they were not enjoying the experience. So as a team we decided that this mechanic had to be reformed, so we did away with the timer entirely and implemented the batteries in a Pac-Man-esque fashion instead.

When a monster becomes pacified, its color changes to white and it stops moving and no longer can harm the player. Should the player make contact with a monster that is not pacified, they will lose a life and start on the surface again. Pacified monsters will also become a part of the player’s collection room if they are still pacified at the time when the center switch is flipped. Although the pacification of a monster is not time based and will not run out after a period of time, on some planets the depacifier is present, which is an enemy that can negate the player’s pacification on monsters.
if he touches them. The depacifier acts as the antagonist of Hello World, and as such cannot be affected by the player during play and cannot be pacified. If he is present on a planet, he will simply roam around the planet depacifying any monster he touches, and killing the player should he touch the Cosmonaut. Once the player has explored the planet to their satisfaction and made their way to the center of the maze, they must flip the switch and initiate the planet’s conversion into a star.

**Escaping a Planet:**
Once the player has activated the conversion sequence by flipping the center switch of a planet, the planet becomes a chaotic frenzy of activity. The camera is immediately zoomed out to show the maze in its entirety and any portion of the initial mask not already removed by the player is fully removed, rendering the entire maze visible. All objects previously in the planet no longer interact with the player either, including monsters, so that the player does not get side tracked trying to get objects or blocked by a monster during the escape. The player must then quickly escape the planet, being careful to stay ahead of the ever expanding sphere of fire growing from the planet’s core. They must also try to avoid bursts of fire that randomly pass through the planet from the core in a laser-like fashion. Should the player get caught in the core fire or hit by a burst coming from it, they will lose a life and start again from the time they flipped the switch. Only once the player has reached the surface again and boarded the Lamp can they truly escape into the safety of outer space, at which point the converted planet will light up any other planets in the vicinity, allowing the player to progress and begin the cycle again.

**Game Over:**
The player begins the game with three lives. There is no health meter for the Cosmonaut, as everything he encounters is fatally dangerous, so being hit by anything that would harm the Cosmonaut will in fact kill him and take a life. Generally, if the player is on a planet and they die, the Cosmonaut will be returned to either the surface or the core, depending on whether they died while exploring the planet or while escaping it. Things discovered by the player will persist from one life to the next, including parts of the maze unmasked, enemies pacified, and objects found, however if the player loses all their lives, they will begin again at Planet X, and all their previous progress will be lost, save the features available on Planet X (ie story bits, warp terminals, collections, etc). All of the planets will be reset and it will be as if the player is starting the game over. This is what makes the space stations so important, as the only way for the player to keep their progress in how far into space they have travelled is by being able to warp
immediately to space stations they have discovered, though they will still need to re-explore any planet they travel to from the station.
Controls:

There are two separate control schemes in Hello World, one when controlling the Cosmonaut and one when controlling the Lamp. Referring to the above illustration, these control schemes are quite simple. When controlling the Cosmonaut, the only actions the player can take are moving left and right, jumping, and shining the flashlight at the world around them. The W,A, and D keys are used to control the movement of the Cosmonaut, A and D for horizontal movement and W for vertical movement. The mouse is used to direct the flashlight, which shines a fixed distance in the given direction. When on board the Lamp, the W,A,and D keys control movement of the Lamp. Holding W activates the ship’s thrusters, while A and D rotate the ship to the left and right to adjust its direction. The thrusters will propel the ship in the direction it is pointing.
**Scoring:**
Hello World incorporates a simple scoring mechanic to help the player gauge how well they are doing in a given play session. The score persists until the player gets a game over, at which point it is reset. Players increase their score by completing planets, that is, by traversing the inner maze, converting it into a star, and escaping unharmed. Once a player completes a planet, the score the achieved on that planet will be added to their overall score. The score a player receives on a given planet is calculated using three different criteria: planet size, collected items, and time.

*Planet Size:* Planet size correlates directly with planet difficulty; larger planets will tend to be more difficult while smaller planets will tend to be easier. Depending on the planet size, the player will receive a fixed amount of points for completing the planet.

*Collected Items:* Players will also receive points for each item they collect within a given planet. This includes pacified monsters, story bits obtained from data terminals, and any other objects they may find within the planet, basically anything that will eventually go in the collection room. The amount of points awarded for each item varies depending on the object.

*Time:* This is fairly self explanatory, points are awarded depending on how long it takes the player to complete the given planet. The faster a planet is completed, the more points the player will receive. The points given from the planet size also helps to offset this, since smaller planets will obviously be easier to complete quickly, while on the larger ones it may prove difficult to get many points for time.

**Interfaces:**
There are relatively few pop-up or menu screens in Hello World, as we felt this would detract from the seamless experience we are going for. The player can bring up a basic pause menu at any point during play, however this will be solely for the purpose of pausing play and will provide no further menu interaction unless the player is on board the Lamp, in which case the pause menu will also allow them access to a “journal” that contains collected story bits. The only other external interfaces the player will see throughout the game are those provided through the collection room and story terminal available on Planet X.
Flowchart:

- **SHIP MENU**
  - OPTIONS
    - VIDEO
    - SOUND
    - HELP
  - ARCHIVES
    - COLLECTION
    - STATS
      - # of Planets Activated
      - # of creatures Pacified
      - # of lightyears traveled
      - # hours played
      - ...
  - STORY BITS
Opening Screen:
Here is the first image the player sees when the game actually starts. No main menu, just a first screen. If the player clicks on ‘controls’ a controls menu will pop open but besides that, the player is fully immersed in the game, with full control of the cosmonaut. On the right an ‘i’ for information sign is visible, this is a signal to new players that if they need more information about how to play the game, or changing the options of the game, it’s to the right. Next to the player on the left is the LAMP, the Cosmonaut’s ship. Placing it within a moment of the player’s starting position allows experienced cosmonauts to jump right into the game.
**Controls screen:**
Here the player can view and edit the controls of the game. The design is modeled after an arcade cabinet. We plan on having the default controls make use of the w,a,d keys and the mouse. Player’s can click on any of the buttons above to change the key bindings for ‘left’, ‘right’ and ‘jump’. The arrows on the left and right of the image above would allow the player to change the input scheme, from keyboard/mouse to joystick or controller. When the player leaves this screen, they will see the window zoom back in on the arcade window and the Cosmonaut, until they are fully in the game again on the home planet.
**Home Planet:**
The Home Planet is where the player starts each play session. The Home Planet serves as a living menu; the Player navigates the Cosmonaut to a specific thing on the planet and interacts with it as if it were a button on some main menu screen. It is composed of 3 layers. The outermost layer contains the Lamp, the Cosmonaut’s ship, which can be used to enter space exploration from the Home Planet. There are also stations placed along the outer level which the player can interact with to change different game settings. The middle layer contains warp zones. The warp zones are teleporters to space stations, or checkpoints, the player has reached in outer space. They serve as shortcuts to traveling through space directly with the Lamp. Finally, the inner layer is the Library. Here the player can read all of his or her collected story bits and the bios of all the creatures they have pacified in their adventures so far.
**Take off sequence:**
This is how it will look when the player enters their ship from the home planet. Once the player reaches a certain distance from the planet, the camera will change modes to work with cartesian coordinates in space and no longer rotate with the player.
**Universe: Part 1**
Now the player is in space. The space exploration gameplay is modeled after the old Asteroids games. The red planet on the bottom left of the screen contains a story bit because it has the ‘s’ identifier. This particular moment shows the player preparing to land on the grey planet in the middle of the screen.
**Landing Sequence:**
As the player approaches a planet in universe mode, the planet begins to grow in scale. At the same rate the planet grows in scale the camera begins to rotate so the normal of the terrain is at the perpendicular with the bottom of the screen. In addition the previously filled in body of the planet begins to drop in alpha value, becoming more and more transparent. If the player wants to land successfully they must make sure that the LAMP lands with both it’s ‘feet’ on the ground. If the player lands incorrectly, his ship will respawn a set distance away from the surface of the planet, giving them another try, or the chance to fly away to a different planet. In the future we’d like to add additional obstacles like rocky terrain and variable gravity. We’re holding off on these features not because of technical issues but do to balancing issues. Making the landing section too difficult may stop some novice players from reaching the meat of our game, the maze.
Arrival on the planet:
This screen shows a player landing on a new planet for the first time. All of it is dark and unknown until they shine the Cosmonaut’s light on it to reveal what the terrain is. The yellow glowing rectangles on the the left and right sides of the screen represent batteries. When the player collects a battery, their light is super charged for a temporary amount of time, allowing them to pacify the creatures on the planet.
**Derp monster interaction: Part 1**

Here we see the Cosmonaut running from a Derp monster which hasn’t been pacified yet (it is still red) and thus still a threat to the player. The player makes the wise decision of running toward a battery to charge up their light.
Derp monster interaction: Part 2
With a super charged head light, thanks to the battery power up, the player returns to the Derp monster to pacify it and therefore collect it’s data and bio on the ship. Now the player can safely pass by the Derp monster.
**Found the Switch:**
At the core of each planet is a switch that will set off the sequence of turning it into a star. After a planet is turned into a star, it can never be revisited because the environment becomes too dangerous for life.
**Flipped the switch:**
The player just started the star transformation initiation sequence. The camera zooms out and all the planet becomes revealed. Laser beams and perhaps other new traps appear in the planet. They player has a set amount of time to escape to their ship before the planet goes super nova and they die in a burning ball of flames.
Dodged lasers, returned to ship:
The player has successfully navigated their way to the ship location without running out of time or getting killed by any lasers or monsters.
**Universe: Part 2**

In the top right of the screen above we see the player flying away from the newly formed star toward the set of planets which are now available because of the added light given by the star.
**Story Bit Menu:**
Between planets, you can open up a story bit menu inside your ship. In this menu any terminals or artifacts you have interacted with during your planetary excursions will be available to read in full detail. By limiting this menu to the times you are on your ship (or on your home planet) we can keep the flow of gameplay fast and arcady on normal planets. Every story bit will have an image, title and main body of text attached to it.
characters

**The Child (NPC)**

*The narrator of Hello World*

The story is told through the Child. The player never sees the Child, for they are experiencing a world within the Child's imagination. We speculate the Child to be of elementary school age, most likely 7-10 years old. Some of our initial ideas and thoughts for the Child and his (We wish to keep the Child without a gender in order not exclude any players) space exploring hero come from the comic *Calvin & Hobbes*, with the main character Calvin often living in his daydreams with the Space man Spiff. Every planet the player discovers as the Cosmonaut represents the Child's interpretation of learning a new aspect of life, or concept in school. Sometimes the planets contain story bits, which are bite-sized textual portals into the Child's life and his imaginary universe of Hello World as he creates it.

**Cosmonaut (Playable Character)**

*The protagonist of Hello World*

The Cosmonaut is the player's key into the universe of Hello World. The player controls the Cosmonaut and his ship throughout the entire game. The Cosmonaut's gender and biological/mechanical status are never mentioned during playing the game, however the Cosmonaut may be referred to as 'he' from here on for simplicity’s sake and in recognition of the fact that the writer of this is male. We chose to keep his gender and biological/mechanical status a mystery in hopes of not excluding anyone who wishes to take part in the journey that is Hello World. The Cosmonaut only exists through the imagination of the Narrator. He was created with a very inquisitive nature and a fearless outlook, that is what makes him such a great candidate for
space exploration. His motivation is solely driven by his curiosity and desire to know more about the universe surrounding him. He is the embodiment of curiosity.
The Cosmonaut is a creature of peace. The only time he ever shoots anything is while flying through space in his ship and that is only at non-living space debris which could harm his ship. One might ask how such a daring adventurer fares on the many hostile planets of an unknown universe. Well, he survives by pacifying the opposition. By shining the light which he emits from his head he can stun and save other living creatures for further observation and curation of knowledge (with the proper charge of his equipment). The light also serves to uncover the mysteries of planets. Most planets will be completely black, or at least depicted with very ambiguous shapes upon the player's first arrival to said planet. After shining the light on the terrain, all is revealed and the planet's outlines stay in place. Other skills of the Cosmonaut include jumping and landing, flipping switches, flying ships, and navigating mazes with assassin-like precision.
The Depacifier (NPC)
The antagonist of Hello World

The depacifier appears in game if the player takes too much time on a planet or in space. Functionally he pushes the player forward and helps maintain an arcade pace. Once he appears, the Depacifier slowly moves toward any monsters the Cosmonaut has pacified. After the Depacifier collides with a pacified monster, the monster goes from placid and pacified to angry and dangerous. Any platforms the player has revealed with his light, go back to dark once the Depacifier passes over them. The player has only the ability to stun the Depacifier with his light, but he can never be destroyed. If the Depacifier depacifies all the monsters in a level, his attention turns to the Cosmonaut, and if he catches the cosmonaut the cosmonaut dies.

The Cosmonaut represents the Narrator's learning and discovery of the world it lives in. Everything must have an opposite. The Depacifier is the opposite to the Cosmonaut. It embodies all of the Narrator's defeat and distraction when it comes to learning difficult concepts in life and school. The Depacifier is the memory loss that occurs from day to day activities which don't encourage learning. Because of its very nature, the Depacifier is the only NPC of the game which cannot be collected and studied because it cannot be pacified. It is simply something which the Cosmonaut must deal with forever during his quest for knowledge, just like we all must fight against memory loss and defeat while tackling difficult concepts of life.

The Derp Monster (NPC)
The Goomba of Hello World
The Derp, or Derp Monster, is an obstacle to be avoided while in a non-pacified state. Being a creature of such basic intelligence, its main goal in
life is to scavenge for food and eat. If one of these comes across a space explorer, naturally it will try and eat him. That is why they must be pacified, also it allows for the Cosmonaut to learn more about these goofy creatures. There could potentially be multiple variants of the Derp in the Hello World universe; each one adapted to the planet it lives on, and thus offering more incentive for the player to collect and examine it. The player knows when a Derp is still dangerous because it will be red, or some other bold color, as light is shined on it, its color will begin to change until it is completely white, or some other 'empty' feeling color, and pacified.

![Derp](image)

**The Ghost Monster (NPC)**

*A Potential enemy in Hello World*

The Ghost monster is transparent so it can float through wall within the planet mazes. But since it’s a ghost, it travels slower than all the other creatures in Hello World, because everyone knows ghosts are slow. The Cosmonaut’s light can stun the ghost, rendering it incapable of traveling through walls. However, when the Cosmonaut’s light is not sufficiently, the Ghost monster can cause harm and damage to the Cosmonaut.
The Flying Monster (NPC)
A Potential enemy in Hello World
The Flying monster can travel through the maze easily since it can fly. It is not made of spaghetti.
Character Types Summary

- Playable Characters:
  The Cosmonaut is the only character in the game which the player directly controls.

- Non-Playable Characters
  Hostile
  Derp, Depacifier, Ghost, Flying

Behaviors:
Derp just wanders around. If it has not been pacified, then it can harm the Cosmonaut. Once pacified, it moves around a lot slower (if at all) and allows the Cosmonaut to peacefully pass by.

Depacifier appears on a planet if the player remains there too long. It moves slowly with occasional fast and direct movements. Upon entering a planet, it heads toward all pacified lifeforms. If it touches a pacified lifeform on the planet, it instantly becomes aggressive again. Once all NPC lifeforms on the planet have been depacified, then it heads for the player. The player has no way of defeating the Depacifier; They can only be stunned temporarily if the light on the Cosmonaut is fully charged and it passes over the Depacifier.

Ghosts hover around the planet. Once a ghost is within a certain distance of he Cosmonaut, it will move toward him, going through walls and any other solid objects. Flying monsters fly. Implementing flying monsters is a nice-to-have feature.
**Themes:**
Hello World's central theme is one of learning and discovery, explored through the adventures of the Cosmonaut through space. As the planet grows brighter with the player's progress, the outline of the world becomes clear, like an idea being explored. With the Cosmonaut's mastery and familiarity of the world, it is left as a shining star, a testament to clarity. The light of the new star casts aside the fog of the unknown, exposing new worlds, new concepts hitherto unknown, ready to be explored. An observation of the mapped universe depicts an ever-expanding light, one driven by the continuous force that is the inquisition of the unknown.

**Structure:**
There are three distinct layers that comprise the narrative elements of Hello World.
The immediate gameplay follows the fearless space explorer through the dangers of the unknown, collecting objects and creatures and traveling between planets. This gameplay is an abstraction of the themes of the games, that of learning and discovery, of growth and self-actualization. Parallel to this gameplay-driven narrative is a third layer, a separate, explicitly defined (but indirectly presented) world which serves to bridge the connection between the other two layers.
This layer is told in a text-based format, through small vignettes called "story bits." These story bits, given in pieces throughout the game, are part of a larger narrative tale. These bits describe the life of a small child, who has dreamt up a world for the Cosmonaut, his imaginary friend, and his many adventures. Currently planned is a format which provides small story arcs, as well as independent fragments which provide a view of this child's life and the experiences the child has. The small stories described will suggest themes of learning and understanding the world through experience.
Because of the nature of these stories, many will be free of a linear presentation, though small story arcs are currently in discussion, which would likely need to be linear.
**Delivery:**
The story bits, will be accessible through computer terminals located in select planets.
Upon reaching a terminal, the Cosmonaut can interact with it and download the story bit into the logbook. Immediately after accessing the terminal, a one or two sentence preview appears, acting as a hook to encourage the player to read this story bit. The story bit can be accessed in full at some point, the exact details of which are still in discussion (though during planet exploration is unlikely.) All accessed story bits during any playthrough are compiled in the Cosmonaut's logbook, allowing the player to read through the entire compilation in one place.
Through this method the story of the child, and by proxy the themes of the game, are left for the player to explore and read about. Though the player is given this choice, it is hardly provided as an "supplemental" feature of the game; rather, it is in some ways the most important, as the story element is intended to serve as the long-lasting impression this game is meant to provide.
**Overview:**
The universe consists of procedurally generated planets. The universe itself is instantial. The planets themselves are always the same, their positions, sizes, themes, and other parameters are hand-authored. We are using procedural planets to make adding individual planets easy, requiring only an additional line in a text file. This will enable us to make a large universe with many planets to explore.

The universe partially persists between game sessions. Planets that have been turned into stars revert back into planets. The player always starts at a specific planet, but will have the option to warp to any space station that they have reached in a previous playthrough. Unlocked story and unlocked collectible items are retained between game sessions. The player also retains a map of all planets that they have seen in all playthroughs, and any special features (story terminals) or collectibles that they have found there.

**Key Locations:**
Starting Planet
- Acts as a main menu, and introduction to the game.
Space Stations
- Act as alternate starting locations, unlocked once the player has reached them.

**Travel:**
The player flies through space in their ship, The Lamp, to reach unexplored worlds. The player is limited to the area that is illuminated by planets that they have turned into stars.

**Scale:**
Planets further from the center are larger and more difficult. They are likewise worth more points. Planets are between 3 and 15 layers thick. Each layer is twice as tall as the player's height. It takes about 20 seconds to get from planet to planet. As the player leaves a planet, the camera zooms
out. As the player approaches a planet, the camera zooms in. The ship has a 'max zoom-out' value, it will never get below a certain size on the screen.

Physics/Objects:

**Space:**
- Ship: “The Lamp”
  - This is the player's avatar when flying through space.

- Planets
  - These are levels. Each should take about five minutes to
complete. Upon landing on a planet, the player traverses a rotational maze, avoiding monsters, or pacifying them using their light.

○ There is a switch at the center of the planet that will turn the planet into a star. After flipping the switch, the player must escape the star growing from the center of the planet.

○ There is always at least one path to the center of a planet, easier planets will be guaranteed more than one path.

○ Different planets will have different types of objects and monsters, and will have different frequencies for terrain features.
• Space Stations
  ○ These function as alternate starting locations, and remain unlocked between play sessions.
• Darkness
  ○ Completing a planet turns it into a star. This pushes back the Darkness, revealing additional Planets and potentially Space Stations that the player can visit.

Planet:
• Cosmonaut
  This is the player's avatar when exploring planets. The cosmonaut can jump and shines a light in the direction of the mouse cursor.
• Monsters
  Creatures that impede the player's progress, and harm the Cosmonaut if he comes into contact with them.
• Antagonist/De-pacifier
  Monster that the player cannot pacify. Wanders around the maze on some planets, making pacified monsters dangerous again.
• Collectibles
  These are fun little pieces of the setting that the player can find while exploring planets. They each have a short textual description and a low-res pixelated texture. When collected, they are added to a collection room which the player can view from the home planet or the ship.
  There is a standard set of collectibles that appears on all planets, and additional sets of collectibles specific to types of planets.
• Batteries
  These supercharge the player's light for a short duration, allowing the player to pacify monsters.

Planet Themes:
Each planet will have a theme, influencing its textures, particle/shader effects, and terrain generation.
• Rocky/Organic
  Uneven surfaces, hard to traverse, slopes and slides slow down escape.
  Particles are shaped like rough polygons, and are slow to change color.
  Fragile platforms collapse when the player steps over them.
  Collectibles slightly more common, but are mostly from the “standard set” of collectibles that can appear on any planet.
• Crystal
  Particles are square, and immediately change color. They use an accumulation buffer that only saves high luminosity areas.
Lots of right angle terrain deformations, spikes, jutting out of the floor. They don’t cause any damage, but do make jumping a constant necessity.
Collectibles include interesting crystal formations (these can be taken from real world geology because some of those are pretty neat, and including actual information about them reinforces the story of learning)
• Ice
  Long flat platforms that have extremely low friction. Particles are triangular, and look like ice shards. Slower to explode than the typical planet, gives the player more time to deal with the icy terrain on their way out. Collectibles include interesting things that have been preserved by being encased in the ice.

• Space Station
  Small in size (typically only 3 layers deep)
The only type of planet that does not have a switch at the center. Once you visit a space station, a wormhole opens up at the center, linking your home planet to the station. This acts as a kind of checkpoint for if you lose all your lives. Collectibles are everyday items that would be used by spacefaring people in the Cosmonaut’s universe. Things like space-icecream and tang are possible.
Additional themes beyond Minimum Viable Product

- **Red Planet**
  Mineral rich, Mars-like planets.
  Maze consists of narrow, but right-angled mining tunnels.
  Particles are angular, background looks like dust drifting through the air.
  Collectibles include pieces of mining equipment and ore samples.

- **Desert**
  Not inspired by Tatooine in any way shape or form. Honestly.
  Passages meander up and down. Some platforms collapse shortly after being stepped on, because they are made of sand.
  Particles have a sand texture, dust effect similar to Red Planet.
  Collectibles include hardy desert life-forms and alien mummies.

- **Biomass**
  A planet that is inundated by a carpet of biological matter.
  Particles are round, shader effect makes particles look like drips of viscous fluid.
  Monsters are plentiful.
  Collectibles include insects, samples of the Biomass, and exotic primordial life-forms.

- **Garden Planet (filled with greenery)**
  Tunnels are like those on a rocky planet, but with extra obstacles in the form of alien plant-life.
  Collectibles include alien fruits, spores, seeds, and fungus.

- **Technological Ruin**
  Planet built by an ancient civilization.
  Particles similar to the Space Station, but terrain textures have glowing lines.
  Collectibles are enigmatic pieces of technology, perhaps relating to the switches that turn planets into stars.

- **Gas Giant**
  Large planet with sparse platforms, some platforms move.
  All monsters are flying.
  Collectibles include strange lifeforms adapted to live on the gas giant, and atmospheric phenomena.
Biomass particle/shader effect.

Concept of technological ruin planet theme
General plan of attack for planet generation.
Procedural generation allows for unlimited planet size if needed
Development Platform:
Primarily, Hello World is developed in Visual Studio C++, 2010 edition. The Simple Fast Media Library (SFML) will provide our cross-platform windowing, graphics, threads, sound and networking frameworks. In addition we are considering the use of Boost, for its shared pointer, lexical cast, and other nice syntactical features. Our version control system is Subversion, using UCSC’s gforge repository.

Tools:
We’re in the middle of building Visual Particle Studio, a tool for our artists to visualize their concepts in our particle system. Already we have enabled Visual Particle Studio to allow the user to import an image, and have the system spawn particles on top of it. These particles follow the image’s color and zip back to the object when your mouse is over it, just like in the game. Eventually we want the particle settings customisable in Visual Particle Studio, allowing the user to edit basic variables associated with the particles, such as speed, lifetime, direction, and randomness.
Character Assets:
Sprites will be needed for the cosmonaut, depacifier, and monsters. At the very minimum, the cosmonaut needs to be animated. Animations for other characters will be very nice to have but not completely required. Other complex animation systems are currently being tested for viability. Character images will need to be made to couple with the particle system being used for Hello World. The sprites will need to be colorful with dark outlines for good effect. The particle system testing program will be given out to artists to test how the characters look under the filters as to speed up development.

Planet theme assets:
The planet visuals for Hello World should have a very high amount of variety. Planet terrain will be mapped onto terrain textures, which may be chosen from an artist-made pool, or generated randomly during runtime. Along with this will be a wide array of static objects. Mechanical themed planets may have machinery-like objects scattered around, forest themed will have tree objects, etc.
Terrain textures will vary from things such as rocky surfaces, mechanical plates, to grassy surfaces. Textures may be high or low resolution, but must be tileable so it may be repeatable across the planet surface.
Static object sprites will be in the form of sprite-sheets. Upon generation, the planet will be populated with many static objects, which will be pulled randomly from a pool of objects based off of its theme. We want several main planet themes to create a level of variety expected from an exploration game; the more themes we have access to use the better.
Music:
The music in Hello World will help set the mood, define the setting, and frame the action for the gameplay. In part this means it will be calm and ambient while in the overworld view and a little more upbeat while on a planet. It also means that the entire soundtrack will strive to reflect the gaming experience itself by adopting the style of classic arcade games with modern (slightly more accessible) elements. Instrumentation and effects will be key here—for instance, using mainly pure waveforms, synthesized percussion based on white noise, bit crusher, etc. Compositional techniques will also play an important role in achieving the desired sound—for instance, prominent melodies, alternating recurring phrases, close attention to tonal effects on tension and pacing, etc. With these basic qualities connecting the soundtrack, two main themes are provided as examples: the Overworld Theme and the Planet Theme.

The Overworld Theme will play when gameplay begins, while the player chooses a planet. The feelings this theme should convey include curiosity & awe. The player will be presented with a galaxy on screen, or at least a part of it that is open for exploration. The theme will strive to musically reflect the visual sense of mystery inherent in withholding certain planets from view & accessibility. This can be done by withholding the release of musical tension, such as a recurring harmonic dissonance that doesn't resolve, or a deceptive cadence. To contrast with the Planet Theme this theme will emphasize the darkness of the Overworld. Current possibilities include using a minimal ensemble, sparse arrangement, ambiance effects such as reverb and delay, and using rhythmic/melodic ostinato on a staccato chip synth created by the musician. After the player chooses a planet to land on the camera will zoom into it smoothly, corresponding with a fade or cut from this theme into the next.

The Planet Theme will have two distinct parts: one for solving the maze to get to the switch, and one for racing the clock to escape the planet after the flip has been switched. The Maze Theme will need to be motivational. To motivate action the tempo will be upbeat. To create a sense of boundless energy, melodies will be made from simple but catchy repetitive riffs. These will make use harmonies of mostly major tonality, with the exception of perhaps a minor turnaround section. It may also be effective to include an alluring human element to this theme. Even something as simple as a featured pitch bend in the melody could help foster player attachment to the cosmonaut and associate this theme with the character.

When the flip is switched the music will change immediately to the Escape Theme. This will reflect the added excitement of the gameplay at this stage using two main methods. First there will be melodic tension in the form of
new dissonances in the melody or harmony. Temporal tension will apply; either the entire theme's beat will be at a sightly increased tempo from the Maze Theme or it will enter double time as the last few seconds on the clock tick away. This theme will most likely depend heavily on the Maze Theme by way of revisiting the cosmonaut's main theme or a variation of it.

**Sound Effects:**
Sound effects will be in the same low-bit arcade-like style as the soundtrack. They will be careful to enhance the player's experience rather than detract from it by being too frequent, obtrusive, or stylistically inappropriate. These sounds will include both game world sounds (jumping, landing, flipping the switch, etc.) and game sounds (menu clicking, life depletion, etc.). They'll be part robot- and part space-influenced synthesized sounds, or sounds that fit this description collected from an open source database.