Harmony Production Document

Tuesday 01

The Concept

Harmony is a maze-puzzle where the player must reunite the two characters, Yin and Yang, by directing their movement on top of a 2D plane. These two characters operate inversely from one another, mirroring each other's move. Players will need to utilise this with careful planning of each character's position and direction to solving the puzzle.

The player controls Yin and is able to direct him in any direction. In addition, the player also inadvertently is able to control Ying, since he will move in the opposite direction as Yin. If Yin moves left, Ying will move to the right and vice versa. Moving the characters will force them to continue moving until they hit an obstacle, and will not be able to change directions whilst either character is still moving. In some instances, one of the characters will be blocked whilst the other will continue moving. This is a good strategy for the player to connect Yin with Yang.

The main obstacles seen within the game are the maze perimeters and directional tiles. These tiles are marked with a direction and will rise from the floor when the corresponding command is given from the player. There will be many different additional obstacles which the player will encounter as he progresses through the game. These include permanently raised blocks, multi-directional tiles and traps having some affects against the character that touches it.

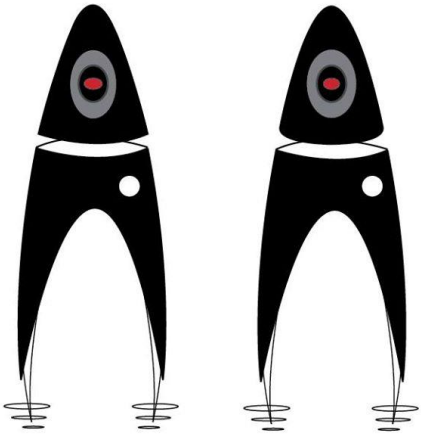


Figure 1 Yin

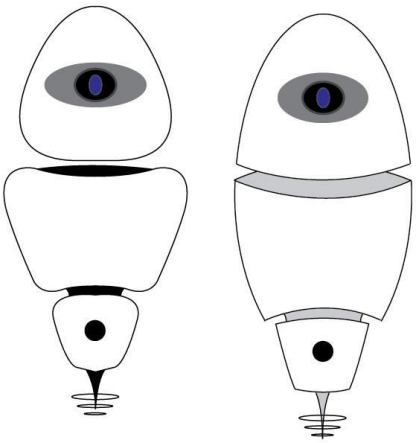


Figure 2 Yang

Audience and Platform

The game will be mainly targeting casual gamers who enjoy playing minimalistic, elegant puzzles and strategy games. The game is intrinsically simple to play with a small move set, but is extremely difficult to master. Because of this, *Harmony* is a fairly difficult game and we predict the demographic will encompass late teens and above.

The game will be primarily played on handheld devices, such as smartphones and tablets via the iOS platform since this is most popular with our demographic. With hopes of Game Centre integration, we plan to add a competitive element for our audience, as they will be able to check their progression versus other players around the world and their highest scores, incentivising them to do better. Since each level can be completely fairly quickly if the player is skilled enough, it is perfect on portable devices. Players will be able to play our game whilst commuting or when waiting in-between classes.

The art style will be mainly focused on futuristic and metallic visuals with very few organic textures. Ultimately, we aim to have to option between two different skins for the player to choose between. The soundtrack will complement the art style with robotic sounds you may hear from sci-fi films. This is to keep our minimalistic theme and cater to our audience.

The Team

Our team consists of five members.

Ashley Wood
- 3D Modeller
- Assistant Programmer

In charge of 3D modelling, unwrapping UV maps and animations, working in 3DS Max. Will also be helping Christian in Unity, working with game objects and coding.

Christian Jong
- Lead Programmer

In charge of building the game inside of Unity. Dealing primarily with scripting in C# in MonoDevelop. Development of prototype and level editor.

Clay Ingram
- Sound
- Custom Controller Developer

Will be finding various sounds to implement into the game as well as recording and editing custom sound files. In charge of designing and building a custom controller to ship with the game.

Daniel Liang
- Lead Designer
- Writer
- Documentation

Team manager in charge of documentation and game design. Will be dealing with communicating and leading the team. Working on game mechanics and level design.

Juan Flores
- Concept Design
- Lead Artist

In charge of concept art, along with theme and style of the project. Will be creating textures to unwrap onto 3D models and other art assets such as logo, menu and level select screens.

The Machinery

There are three core mechanics that define our game which separates it from the plethora of available content online.

1. Single trajectory movement

   Both Yin and Yang move in singular directions until they collide into an obstacle. Both characters will be unable to change directions unless both characters have lost all momentum. This mechanic requires more attention to detail from the player as they are unable to maneuver around obstacles as easily as it would be if they could move one tile at a time. This makes every move crucial and punishing if the player doesn't consider the consequences of his actions, as trying to reverse their move isn't always an option.

2. Opposing duality between two entities

   Yin and Yang move in opposite directions. If Yin is told to move to the right, Yang moves to the left. Because of this mechanic, the player is able to indirectly manipulate both characters to achieve their goal, which is the unity of these two characters. Originally, Yang was to be controlled by a predetermined sequence of actions but was scrapped in favour for more player agency. This mechanic helps anchor our narrative of opposing forces where balance is the key.

3. Environmental interaction from player input

   Direction tiles are scattered throughout each level and raises from the ground to block the characters from advancing when activated. It is up to the player to move around these obstacles or utilise them in their favour. Since these tiles block player movement, the player can exploit the fact that they've been stopped to change directions. It is this dynamic that helps our player navigate around the maze to unite with Yang in what would be an otherwise, impossible task.

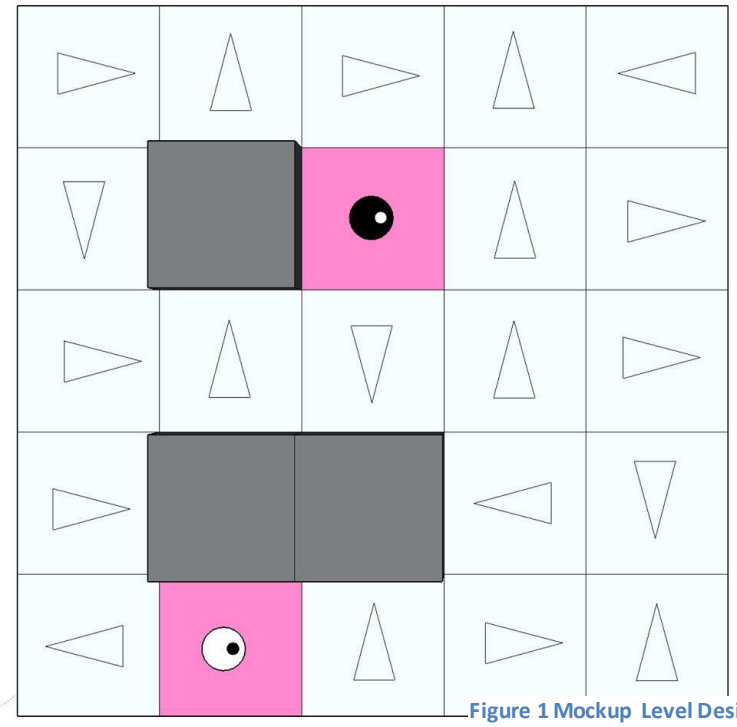


Figure 1 Mockup Level Design

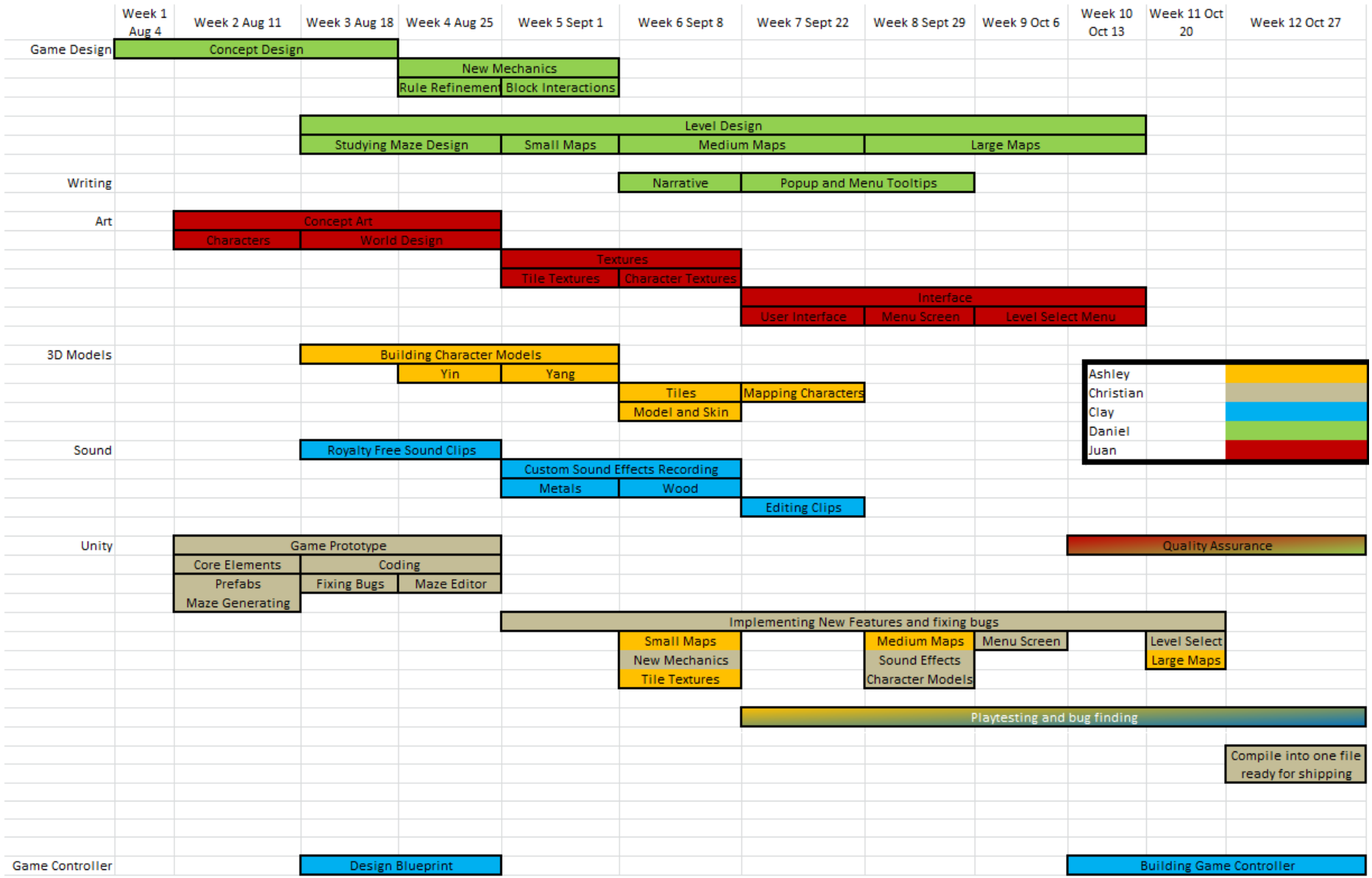
The Schedule

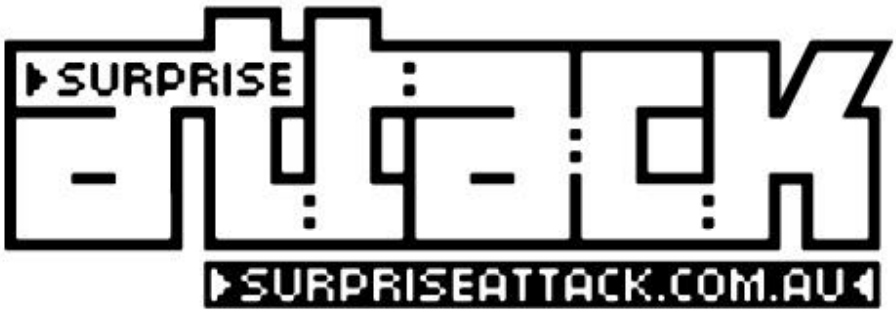
Harmony has approximately 12 weeks to be completed and ready for shipping. We plan to complete a polished prototype early in the timeline, which includes all our intended interactions. The weeks to come afterwards will bring additions to our finalised product, such as the Title or menu screen, level selection, art assets, sound effects and further refined levels.

We will be using Unity to develop our prototype and final build. Unity allows our team to work independently with customisable prefabs which can be altered when new assets come through the pipeline. With the game prototype built early; we can design, test and build mazes in different scenes with these prefabs and compile them into a finalised build.

In addition to implementing features into the game, we will be regularly playtesting to find bugs or unexpected interactions and patching the game until release.

Refer below for Gantt chart of project timeline.


Week 1 Aug 4
Week 2 Aug 11
Week 3 Aug 18
Week 4 Aug 25
Week 5 Sept 1
Week 6 Sept 8
Week 7 Sept 22
Week 8 Sept 29
Week 9 Oct 6
Week 10 Oct 13
Week 11 Oct 20
Week 12 Oct 27
Game Design
Concept Design
New Mechanics
Rule Refinement
Block Interactions
Level Design
Studying Maze Design
Small Maps
Medium Maps
Large Maps
Writing
Narrative
Popup and Menu Tooltips
Art
Concept Art
Characters
World Design
Textures
Tile Textures
Character Textures
Interface
User Interface
Menu Screen
Level Select Menu
3D Models
Building Character Models
Yin
Yang
Tiles
Mapping Characters
Model and Skin
Ashley
Christian
Clay
Daniel
Juan
Sound
Royalty Free Sound Clips
Custom Sound Effects Recording
Metals
Wood
Editing Clips
Unity
Game Prototype
Core Elements
Coding
Prefabs
Fixing Bugs
Maze Editor
Maze Generating
Quality Assurance
Implementing New Features and fixing bugs
Small Maps
New Mechanics
Tile Textures
Medium Maps
Sound Effects
Character Models
Menu Screen
Level Select
Large Maps
Playtesting and bug finding
Compile into one file ready for shipping
Game Controller
Design Blueprint
Building Game Controller



INDIE GAME DEVELOPMENT POSTIONING WORKSHOP

WORKBOOK

STUDIO NAME: **Tuesday 01**

PROJECT NAME: **Harmony**

CONTENTS

IS / ISNT

List any words that can describe what your project definitely **IS** or definitely **ISN'T**. This can include anything you think is relevant including things such as platforms, genre, mechanics, business models, price, target audience, development method, art style, meta-game, single / multiplayer and also descriptive words e.g. colourful, retro, ambitious, simple etc.

The goal of this segment is to warm up and start thinking about the choices you've made about the game and what they might mean. Critically, the decisions you've made about what the game ISN'T are often more instructive than than those about what it IS.

IS	ISNT
Single-player	Multi-player
Maze puzzle	Shooter
Sequencing and Strategy	Platformer
Movement and Positioning	Roleplaying
Minimalistic	First-person
Bird's eye view	AAA Title
Turn-based	Complicated mechanics
Interactive environment	High learning curve
Rustic and dull palette	Real time
	Static
	Bright and vibrant
	Colourful

COMPETITIVE VARIANCE

A key component of positioning is understanding the competitive or comparable games and how you will differ from them. First list the key reference titles / competitors for your game and then thinking of them, identify ways in which you game is difference.

This exercise should be a starting point. Ideally you should conduct some detailed research into these games – play them extensively, read a range of reviews (good and bad) and check out whatever sales data you can on them –AppAnnie.com is great for this when it comes to iOS or Android games.

The goal for this section is to identify the most important difference / the aspect in which your game stands out most from the other comparable titles. You may then want to consider putting further focus on this aspect of the game in development and promotion.

Competitive / Reference titles:

1. Quell…….
2. Impasse…….
3. Unblock Me…….
4. Boxed In…….
5. Cryptica…….

MORE	**DIFFERENT**
Characters (2) Interactions with Environment Planning required	Shifting Environment Single input to command both characters Goal point are the characters themselves (must touch each other)
LESS	**NEW**
Collecting Timing Dying	Inverse control of characters Shifting tiles that react to the player's input

EMOTIONAL REWARDS

This section is about getting away from the functional feature set of the game and thinking about what the player is getting from the experience and why they would want to play the game. How does the player feel when they are playing the game and what are the emotions the game creates?

Most games will engender a set of similar emotions but the strength or importance of these and the specific formula will vary substantially. For example, Street Fighter is a game that engenders both adrenaline and excitement due to its fast pace but also a sense of mastery as the player gets better and better at the extremely deep combat mechanics. Sudoku is a game that also delivers a sense of mastery as you complete harder and harder puzzles but it is combined with a sense of calm and focus.

On the left is a list of example emotional rewards that will often crop up in games. Thinking of your game, re-order these words (and any others you want to add yourself) in the column on the right starting with the most powerful / most important at the top.

EXAMPLE EMOTIONAL REWARDS	IMPORTANCE IN YOUR GAME
Accomplishment Achievement Adrenaline Amusement Belonging Competition Collection Connection / Inclusion Creation Empathy Empowerment Enlightenment Escape Evolution Exclusion Fear Frustration Joy Mastery Nurturing / Development Progress Protectiveness Rage Release Sorrow Superiority	Enlightenment Achievement Accomplishment Mastery Frustration Rage Obstructed Joy Progress Competition

PERSONALITY

Think about your game as if it were a person, would it be happy, sad, serious or jovial? Would it be aggressive and loud or quiet and subtle?

This section is particularly important for defining the way you will communicate about the game and the content of marketing materials such as trailers, the press release, website etc. as they should all be in sync with the personality of the game. Equally, all elements of the game itself should be consistent with the personality you want it to have.

In the chart, list out any personality words that apply to the game as it is now or as you want it to be. Then select the three more prominent / powerful personality words.

Three Core Personality Words

Clever	Honest	Methodical

All personality words that apply

Easy-going

Moody

Quiet

Shy

Smart

Wise

Ambitious

Confident

Loyal

Methodical

Reliable

Creative

FRIENDS / BIZARRO

In this section, the goal is to bring the game into the real world and consider what other things represent similar values. This helps you to turn the words from the previous sections into a visual representation as well as helping to tease out nuance in your previous answers.

In the chart below there is a list of categories – a car, a food, clothing etc. For each of these, think about what particular brand or item from that category best represents your game. If you have time, also think about those, which would be the opposite of your game.

For example, if Call of Duty were a car it would be a Hummer – big, brash, loud and aggressive with military styling. In bizarro land, Call of Duty would be a hybrid or maybe a Smart Car.

After the workshop, once you have lists you are happy with, do a google image search and collect pictures of all the items on your frienda and bizarre list. Lay these out on a friends sheet and a bizarre sheet so that you get a visual representation of your game and also the antithesis of your game.

CATEGORY	FRIEND(S)	BIZARRO
Car	Mini	4WD
Vehicle	Segway	Racecar
Drink	Cocktail	Coca-Cola
Food	Fruit	Lasagna
Lolly	Sour Worms	Jelly Beans
Actor	Johnny Depp	Arnold Schwarzenegger
Movie	Frozen	The Expendables
TV show	News	The Simpsons
Character	Neo	Rudy Rhod
Super Hero	Superman	Batman
Musical style	Classical	Dubstep
Band / Singer	Henry Mancini	Justin Bieber
Clothing	Armani	Hot Topic
Animal	Whale	Lion
Colour	Indigo	Pink

SUMMARY SHEET

TOP 5 IS	TOP 5 ISNT
Maze Puzzle	Complicated Mechanics
Interactive Environment	High Learning Curve
Movement and Positioning	AAA Title
Minimalistic	Bright and Colourful
Rustic and Dull Palette	Real Time
TOP AREA OF COMPETITIVE VARIANCE	

TOP 3 EMOTIONAL REWARDS		
Enlightenment	Mastery	Frustration

TOP 3 PERSONALITY TRAITS		
Clever	Honest	Methodical

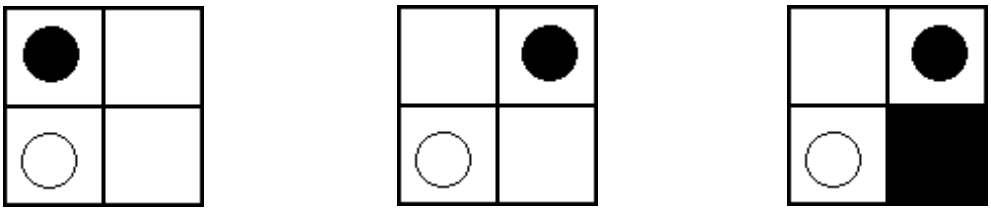
TOP 5 FRIENDS	TOP 5 BIZARRO
Cocktail	Racecar
Fruit	Arnold Schwarzenegger
Johnny Depp	Batman
Classical	Justin Bieber
Indigo	Hot Topic

Level Design Guideline

To design a maze in Harmony, we must first understand how the game operates on a fundamental level. What are the mechanics in the game, and how does each affect the game?

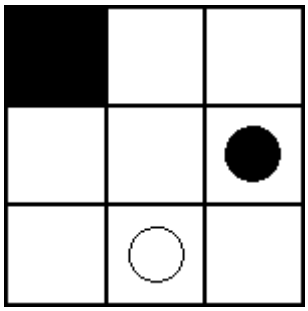
1. Characters slide uniformly in inverse directions at the same time
2. They cannot change directions whilst in motion
3. Tiles raise from the floor depending on player's directional input

So what does this mean? Due to the characters moving in opposite directions at any given turn, on any board with four corners, if the player cannot win in one move, then the maze is unsolvable. The characters will circle around the perimeter of the maze indefinitely. Therefore, at least one obstacle must be placed within the edges of the board. Let's take the game in the most simplistic form, a 2x2 square and input both characters in any permutation. If the characters are adjacent to each other, the level will be solved in one move. If the characters are diagonal to each other, the level is unsolvable due to the above reasons. However, if we add an obstacle onto the board, the maze becomes solvable.

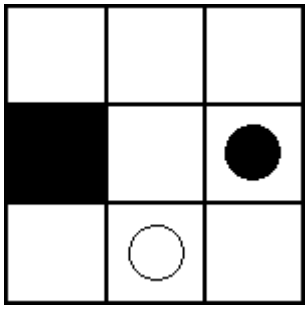


As you can see, the first image shows an example of the two characters adjacent to each other. This maze is solvable in one move. Let's say the player controls the white circle, if they move towards the left, he will put himself into an infinite loop. The second image shows an infinite loop with the two characters never able to touch. The characters will move to opposite corners of the board with any move they make. In the third image, due to the obstruction in the bottom right corner the maze is solvable due to the characters being trapped and forced to align. In the image above, the black square represents a permanent block; one that is always raised and blocking both characters' movement. This permanent block can be replaced with any direction tile and still be solvable. In all permutations, this is correct due to one reason. In a certain turn, one of the characters will be trapped and stay still, whilst the other character is able to move adjacent to it.

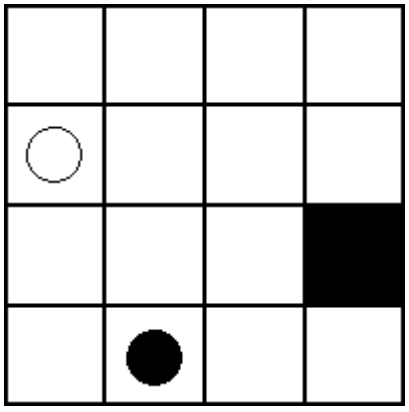
So what does that sum up into? For a puzzle to be solvable in any dimension, the maze must contain an obstruction around the perimeter. This is true for all permutations for the 2x2 plane. Let's see how this translates onto a bigger plane. If we take a 3x3 grid, and implement the same rules, the game breaks and becomes unsolvable in some permutations. Again, if the characters are aligned on a single axis, the game is solvable in one move, but if not, will be an infinite loop. On any load state, the player will enter the infinite loop after a maximum of two moves. Let's try to fix this put inserting an obstacle.



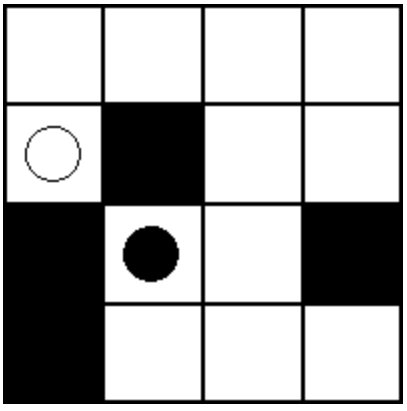
In this permutation and mirrors thereof, it is impossible to connect the two characters. If we inspect the maze closer, this is actually a 2x3 grid in disguise. At some point, two cells adjacent to the permanent block will cease to exist resulting into an infinite loop again. We can fix this problem with another obstacle but will make the game board cluttered and difficult to read. We should aim for elegance. Is any permutation solvable with only one obstacle block?



It turns out this example is in fact solvable. Analysing the position, we can see that the characters never get trapped in a smaller grid but are able to fully utilise the extra two cells given to them. These corners are able to contain one of the characters while the other moves into alignment. However, the same cannot be said with all direction tiles. It turns out that the direction tile used as the obstacle for the perimeter rule cannot be one adjacent to the axis. If in this picture, the permanent block was replaced with either a right or left tile, this would instead become unsolvable. This is because neither character is able to stabilise their position within the middle row, so that they can utilise this tile to trap itself for the other character to line up. If the direction block is on the opposing axis, it will have the chance to act the same as the permanent block.



Now that we've unravelled the 3x3 grid, let's take a look at the 4x4 grid. Applying the knowledge we have, we will realise that for any 4x4 maze to be solvable with only one obstacle, one character must become trapped within the corner within the quadrant the block is placed. As long as the player controls his pieces correctly, the grid will always break into a smaller one. A lot more about the physics of the game are revealing itself to us as we move into bigger dimensions. But if we're constantly using a corner blocking obstacle, our game is going to get stale, very quick. Let's try adding one extra obstacle into the fray.
Remember not to create zones on the map that create new grids.



This variation utilises the spawning position and precise sequencing of move sets before placing down the obstacles. In what would have been a quick game, the obstacles are able to increase the difficulty by forcing the player to take additional steps to reach the goal.

Those were the basic guidelines of level design in the game Harmony. By breaking the game down into its core components of moving pieces and barricades, we can analyse the impact each object within the game world affects the player's strategy. To make each level more difficult, try replacing obstacles with specific directional tiles which may allow one character in and block the other. Pl an around with these interactions and synergies in mind to create a more challenging puzzle.

So to sum up what we have learnt, let's break down the guideline into specific points.

1. Always have at least one obstacle in the perimeter
2. Never break the map into a smaller grid
3. If there is only one obstacle in the perimeter, to not let it be in the corner
4. Place spawn points after developing perimeter
5. There should be a solution before placing additional obstacles
6. Plan according to sequence of move set and obstructing the player
7. Find solution again after placing every additional block
8. Continue unsolvable puzzle by adding obstacle where it will allow for solve if there is enough space to do so and if it forces the player into an interesting route
9. Consider all other possible solutions after finishing your puzzle
10. Block off the other solutions if you only want one solution for level

The Narrative

Yin and Yang are two opposing forces within the universe, bound together since the creation of time. They have acted in unison, bringing order in chaos. Their power is infinite yet equal. However, the actions of mankind have tipped the scales of balance, favouring one or the other, threatening the destruction of the world as they know it. Deep within the consciences of all living creatures; Yin and Yang have been torn asunder, barriers erected from the ground to create mystical labyrinths, further preventing the reunification of these two forces.

With each mistake man makes, irreversible consequences inevitably doom the two forces into the opposite corners of the universe. Things have got to change. The healing process must begin. Mankind must realise by now of their devious ways. The fate of the world is held in their hands. Will you make your contribution?