

**Hepcat:**

**Design Document**

**by E.G.G. Inc.**

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## Game Overview: "Hep Cat"

The game is set in a location inspired by 1920's New Orleans, during the period when jazz was first popularized.

**Key locations:** a speakeasy bar with a backroom, a greenroom, a backstage, and a stage connected by a hallway. Our main character is Hep the Cat, a jazz musician. After a near-death accident, he becomes enamored with Death, the antagonist, and is set to impress them with a serenade. Meanwhile, Death is set to kill him, as this is their natural goal.

The player, as Hep Cat, would work to avoid the deadly situations set-up by Death through a rhythm-based mechanic, soothing his enemies with his music. If successful, Hep Cat would survive and progress in the writing of his serenade; if unsuccessful, Hep Cat would die and will have to continue from the last save point.

Hep Cat is a story about finding beauty in misfortunes, the ridiculousness of cats, jazz, memes and an overall celebration of life and death. Its characters, setting, and mood all aspire to reflect these themes by playfully telling a humorous story about a Cat-Jazz musician who falls in love with the physical embodiment of Death.

## Gameplay

1. Centered around engaging the player using simple rhythm-based games:
  - a. Similar to Guitar Hero, the player presses **WASD** or **arrow keys** according to a given beat/rhythm indicated by notes moving from right to left on a music staff
  - b. The player must exceed a certain success rate to win, if they lose, they must try again. (Game may end and restart at a checkpoint).
  - c. Situations that trigger rhythm-based gameplay:
    - i. Tutorial\*
    - ii. Enchanted Angry Alligator
    - iii. Enchanted Weird Gumbo
    - iv. Final Serenade

\*The Tutorial does not have a death sequence. Instead it used to introduce the player to the mechanic
2. Interacting with NPCs:
  - a. There are characters who are/ will be fellow band members. After interacting with them throughout the course of the game they will appear at the final stage of the game.
  - b. There are NPC's which also give exposition/ flavour to the game.
  - c. Dialogue interactions aids in exposition, narrative development and map guiding (where to go next)
3. Saving the file:
  - a. Certain characters/events will serve as save points for the game.
4. Interacting with environment:
  - a. These NPCs and objects will be mainly for world-building purposes. Items will be interactable, containing flavour text. There is a mini DDR inspired puzzle in the hallway.

## Winning the Game

Winning the internal rhythm game will be determined by a success meter that increases based on player's performance with the game, needing a certain percentage to successfully complete that certain section



The game is won when the player succeeds in the final 'Concert Stage' phase of the game, where Hep Cat needs to serenade Death.

## Losing the Game

Failure will also be visualized using the same success meter. If the player does not succeed in the goal, they enter a 'game over' state where they have to start again from the last checkpoint.



## Writing

### The Plot

#### **Intro (cutscene):**

On a regular evening at one of the town's many jazz pubs, a speakeasy, is where we first meet Hep the Cat, who's sitting at the bar trying to overcome his writer's block. The crowd is drinking, dancing, having a good time when suddenly a meteorite crashes in the middle of the dance floor, not very far from our dear hero. The hit ensues absolute chaos, killing one poor soul who was unfortunate enough to be underneath its trajectory. While everyone ran away, Hep glimpsed an entrancing figure, enrobed in a dark cloak, standing right by the dead body. He is enamored, he has never seen anyone this dazzling. And the figure... Looks back at him. For a second they make eye contact, and it's love at first sight. But then! A panicked crowd crosses their way, and... The figure vanishes! Hep Cat, dumfounded, is hit in the head by a brick, rubble from the crash, getting knocked unconscious. What he didn't know is that the being he saw was the physical embodiment of Death.

The next morning, in a café across town, Death reads the death parchment, with all the names of the day's dead. And there they see, black over white, one name: Hep Cat. Their duty for the day was set; Hep Cat's destiny had come and today, Death's job would be to kill him.

#### **Beginning of game + tutorial (backroom):**

Later that day, Hep finally wakes-up on the couch of the Speakeasy's Backroom. That chaos had really wrecked him, he couldn't remember a thing... Except... A feeling... A face... Love? That figure from the other night! The sudden rush of emotions is enough to get him out of bed, he had set a goal for that day. For some reason, he was sure they would show up again that night. And he feels a burst of inspiration! The writer's block is fading, that cloaked muse inspired him! He was ready: he would write a song and serenade them that night, as if it was his last day on earth.



Looking for his notebook, he wanders around the room. But he doesn't find it. Still, he has to try a melody. He picks-up an alto saxophone on top of a table, and he plays it.

The Tutorial Level starts, the player is introduced to the rhythm game in a no-stakes setting. If they win (high score), Hep Cat comes out proud of himself, if they lose (low score), Hep comes out embarrassed, blaming his grogginess for his poor performance. Motivated after this musical warm-up, Hep Cat proceeds out of the backroom to seek for his song-writing notebook, entering the Speakeasy's main bar.

### **Speakeasy Bar + Level 02 (Alligator):**

Cutscene: minutes earlier, Death drags an Alligator of New Orleans' swamps into the Speakeasy, enchanting him with a anger spell.

As Hep Cat crosses through the door he bumps with his fellow bandmate, Bongo Cat, the drummer! What a surprise! The percussionist was glad to see him finally awake, as the previous night had been an utter mess. They briefly chat, and Bongo informs him of an alligator! In the Speakeasy! And because of it, they may not be able to perform tonight. Hep, confused but wanting to perform for that shadowy figure, decides to go and investigate. The game saves, and the player can move around the Speakeasy.

Hep walks down the bar, heading towards the Hallway. And there lies a huge, peacefully sleeping alligator. Hep tries to wake him up, but oh no! The alligator wakes up, and he's furious! How dare this incompetent fool disturbs his beauty sleep!

It's the beginning of Level 2: if lost, Hep dies. But if won, he survives and soothes the Alligator, progressing with his serenade! The alligator, now embarrassed of his actions, reveals that his name is in fact Allie and that he only attacked Hep because he didn't realize who Hep was! Allie is one of Hep's biggest fans, and has always dreamt of being in a jazz band. With a burst of energy, Allie asks if he could perform with Hep tonight, and after Hep offers a confused yes, he runs off excitedly to find the Final Stage.

After that, the player is free to explore the Bar, and the game only progresses once they've made their way to the Hallway.

**Hallway + Break Puzzle (DDR):**

As soon as Hep walks into the Hallway, BAM, He runs into Charlie! HE immediately asks him if he knew where his notebook was, however, Charlie has other intentions. Apparently, he wanted Hep to test out a new rhythm experiment he has built: the Dixie Dig Rhythm (DDR for short), and he was only going to give Hep his notebook's location once he did it. It is a simple game, where Hep should repeat an order of movements given by Charlie, and Hep could only advance if he followed accordingly (pressing arrows according to steps). The hallway is divided in three phases: one easy (a giant poster gives the code), one harder (Hep would need to use poems to guide him) and one impossible. In the impossible one, Charlie starts dancing up, down, left and right, and those are supposed to be the correct order of movements. However, his pace gets faster and faster, and Hep cannot follow it anymore! And bam! Charlie crashes tired into the ground. He went too fast! As a reprisal for his errors, he gives away the directions for Hep's notebook without having to do the puzzle. "It's in the greenroom", Charlie says. With the new information, Hep freely walks down the hallway.

**Greenroom + Level 03 (spoiled Gumbo):**

Cutscene: Death enters the Greenroom, approaches a pot of gumbo left in the middle of the room and enchants it. It comes alive as a monstrous angry little blob. Death leaves, sneakily.

Hep enters the room and is hit by a putrefied smell of rotten food. In front of him, a single, sad pot of Gumbo sands in the middle of his path. Walking around, he can find his notebook on the floor. He tries taking it, but OH NO the Gumbo! It comes alive and attacks! It's the beginning of Level 3! If Hep loses, he dies, starting again at the save point and Death wins! But, if his musical skills are good enough he calms down the food, progressing even more in his serenade. Surviving once again and finally getting his notebook. After he has picked it up, he's free to interact with the now sentient, but cute, pot of gumbo and leave the room.

Hep is now free to explore the hallway, interact with objects, go back to the Speakeasy, etc. . This is where the player can find the easter E.E.G. room, a secret room which contains a few select phrases from his creators... we all wonder what they might say.

Once he is done with the exploration, he can proceed to the final room of the game, the backstage.

### **Backstage:**

Cutscene: Death flies up the mezzanine and rips the rope that holds one of the curtain's weight, a sac of sand. Maybe this time they will finally kill Hep Cat.

Hep enters the backstage where Allie, Charlie and Bongo await for him to start the performance. When he enters the stage, there is no going back.

### **Concert Stage + Level 04 (boss level):**

Level 4, the final level, the boss level, starts! Hep Cat is at the center of the stage, surrounded by his band (Bongo Cat, Charlie Schmidt and Allie), the audience is cheering and he has finally finished writing his perfect song! He knows that figure from the other night is watching him, and he is ready to play! All of the elements from the previous levels come into play, and the full score is blasting in the hardest challenge yet! It's the end! If he loses, he dies in a tragic accident, crushed by a sac of sand, but if he wins... Oh if he wins...

### **The End:**

Cutscene: Hep stands, glorious, facing the audience's praise. And then, he sees, in the middle of the crowd, Death, blushed, clapping, stronger than anyone. They sync, looking at each other with a vibrant passion. But oh no! Death remembers something!

The sac of sand! Death flies up the stage, pushing Hep away in a burst. The heavy sac falls in a loud bang, a split second after. The audience goes crazy, it's the best concert they've been! Death and Hep Cat finally talk to each other. "Did you like the song I wrote you?". "I've liked it as I've never liked anything in my life".

The curtains close, the lights fade and the audience continues cheering. All is well when one has embraced death.


## Cutscenes


N°	Significance	Event	Location	Characters	Description	Audio
1	Intro to main goal	Hep Cat meets Death	Speakeasy Bar	Hep Cat, Death,	Near-death encounter	Meteorite sounds, bar sounds in the background, speakeasy saxophone melody occurring, music that shows love at first sight music between death and hep
2	Intro to antagonist goal	Death is given the task of killing Hep Cat	Café	Death	Death reads parchment	Toy Music Box Melody + Coffee shop sounds
3	Losing rhythm game with life/death stake	Hep Cat Dies	Green Room, Backstage, Concert	Hep Cat	Hep Cat is dead under spotlight, Death in the background	Heart Beats (four consecutive) with a flatline monitor sound on the off-beat followed by a flatline sound
4	Setup for level 2	Death sets the Speakeasy death trap	Speakeasy	Death, Alligator	Death drags an Alligator to Speakeasy Bar	Dragging of alligator and bar noises + death floating noises and alligator snoring, Magic Sound
5	Winning level 2	Hep Cat survives	Greenroom	Hep Cat	Hep Cat gets his notebook	Saxophone riff With clapping
6	Setup for level 3	Death sets the Greenroom death trap	Hallway to Greenroom	Death, Sentient food	Death enchants the food in the room, they come alive ready to kill	Gumbo sound! Magic Sound → to put in during gold, death floating
7	Setup for level 4	Death sets the Concert death trap	Backstage to Concert	Death	Death rips a sac of sand's rope	Ripping of rope, floating sound of death

8	Winning final Concert	Hep Cat successfully serenades Death	Concert Stage	Hep Cat, Death,	Death is also clapping, thrilled.	Clapping audience, romantic music.
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## Characters

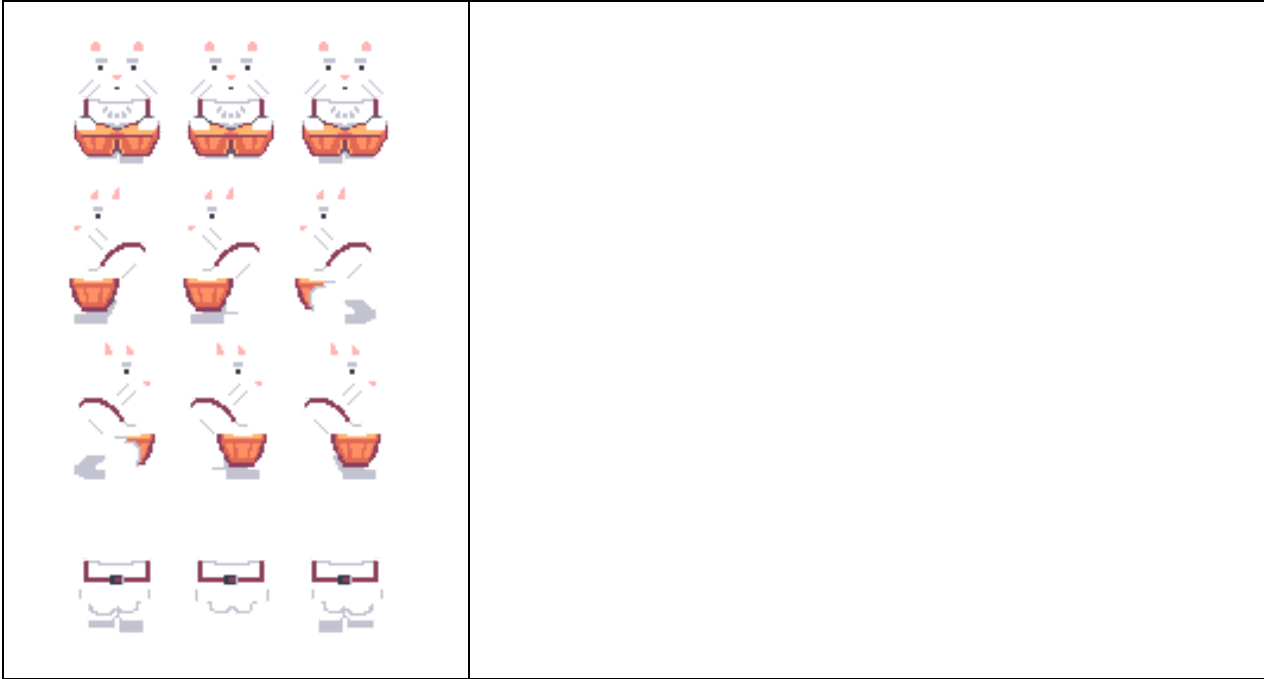
### Main Characters:

<p><b>Hep Cat (protagonist):</b> Saxophone player in a Jazz trio under writer's block.</p> 	<p><b>Goals:</b></p> <ul style="list-style-type: none"> <li>- Write the perfect song to impress Death</li> <li>- Survive the deadly conundrums set by Death</li> <li>- Go from the Speakeasy's backroom to the Concert Hall to play the Serenade</li> <li>- Assemble the items to write the perfect song.</li> </ul> <p><b>Personality:</b></p> <ul style="list-style-type: none"> <li>- Clueless, aloof</li> <li>- Good hearted</li> <li>- Low-key dumb</li> <li>- Passionate</li> </ul> <p><b>Appearance:</b></p> <ul style="list-style-type: none"> <li>- Height: Short (5'4", or 2 ½ heads tall)</li> <li>- Fur: Black and white "Tuxedo Cat"</li> <li>- Clothing: white shirt, dark trousers, red bow tie and suspenders. No shoes</li> <li>- Age: 5 years old (human years), 36 years old in cat years</li> </ul> <p><b>Animations:</b></p> <ul style="list-style-type: none"> <li>- Walk cycle</li> </ul>
<p><b>Death (antagonist):</b> The physical embodiment of Death</p>	<p><b>Goals:</b></p> <ul style="list-style-type: none"> <li>- Kill Hep Cat, as assigned in parchment</li> <li>- Set up deadly conundrums meant to kill</li> </ul> <p><b>Personality:</b></p>

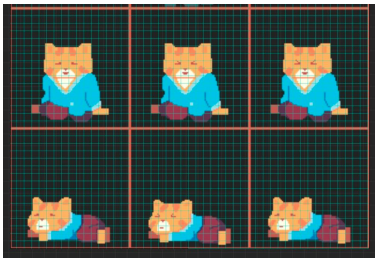
	<ul style="list-style-type: none"> <li>- Determined</li> <li>- Stern, quiet</li> <li>- Very intelligent</li> </ul> <p><b>Appearance:</b></p> <ul style="list-style-type: none"> <li>- Height: tall, slender, 3 ½ heads tall</li> <li>- Gender: genderless</li> <li>- Age: ∞ years, ageless</li> <li>- Floating black cloak with a cat skull, white mittens</li> </ul> <p><b>Animations:</b></p> <ul style="list-style-type: none"> <li>- Walk cycle (floating)</li> <li>- Idle animation (standing still, floating)</li> </ul>
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### Non-Playable Characters:

<p><b>Bongo Cat, Band member #1 (Drummer)</b></p> 	<p><b>Role:</b></p> <ul style="list-style-type: none"> <li>- Provide exposition and guide Hep Cat from Speakeasy bar to Hallway 1</li> </ul> <p><b>Personality:</b></p> <ul style="list-style-type: none"> <li>- Laid-back, easygoing. Very passionate about being 'in-tune' with drums.</li> </ul> <p><b>Appearance:</b></p> <ul style="list-style-type: none"> <li>- White fur, wears no clothes and only has a pair of bongos covering his front.</li> </ul> <p><b>Animations:</b></p> <ul style="list-style-type: none"> <li>- Walk cycle</li> </ul> <p><b>Locations:</b></p> <ul style="list-style-type: none"> <li>- Speakeasy bar, Backstage and Concert Stage</li> </ul>
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**Charlie Schmidt, Band member #2 (Piano Player)**



**Role:**

- Provide exposition and guide Hep Cat from Hallway 1 to Greenroom

**Personality:**

- Very outgoing, loud and eccentric. Ends every sentence with the word 'sport'.

**Appearance:**

- An orange tabby cat wearing a blue shirt and brown pants

**Animations:**

- Walk cycle
- Fallen animation

**Locations:**

- Appears in Hallway 1, Backstage and Concert Stage

**Pot of Gumbo**



**Role:**

- Is the deadly conundrum for Backstage Level
- Attacks Hep Cat and kickstarts Level 3
- Attempts to Kill Hep Cat

**Personality:**

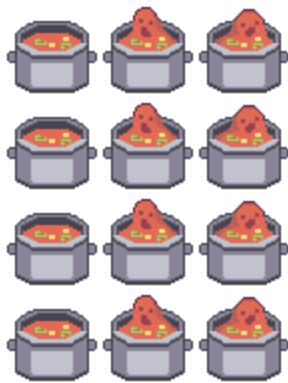
- Evil, goopy, and angry. Only goal is to attack Hep Cat

**Appearance:**

- A spoiled bowl of gumbo. Brownish, chunky, sad yet menacing.

**Animations:**



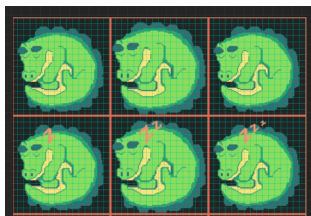
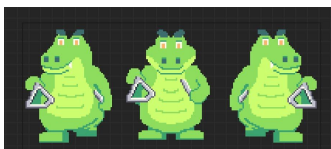
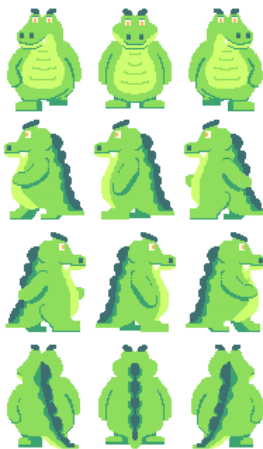


- Idle animation (angry)
- Idle animation (calm)

**Locations:**

- Greenroom

**Allie, the Alligator**



**Role:**

- Is the deadly conundrum for Speakeasy Level
- Attacks Hep Cat and kickstarts Level 2
- Attempts to kill Hep Cat
- Join Hep's band as the triangle player if level 2 is won

**Personality:**

- Initially angry after being awoken from sleep
- Shy, aloof.

**Appearance:**

- Short, large, green. Has a single tooth on the side. Yellow-orange eyes and defined eyebrows.

**Animations:**

- Walk cycle
- Sleeping animation
- Playing triangle (final concert stage)

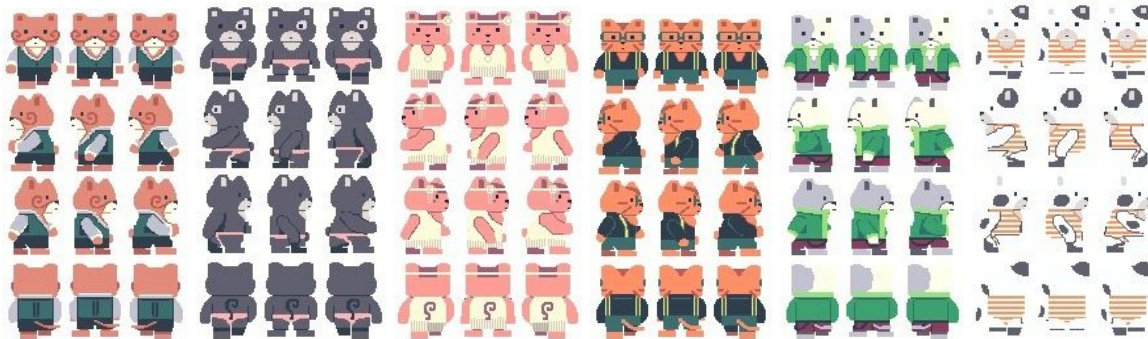
**Locations:**

- Appears in Speakeasy, Backstage, and Concert Stage

## Extras:

The characters listed below have little to no impact in the narrative and appear in only one location. Their main function is to provide “clutter/crowd”, that is, to fill the spaces with interactive presences. If the player interacts with them, short dialogs will be triggered.

- **Crowd/Concert Audience:**
  - **Appearance:** Multiple cats sitting
  - **Locations:** Concert Stage
  - **Animations:**
    - “Jamming to the beat” animation
- **Speakeasy bar crowd**
  - An assortment of weird cats with walk cycles(a bartender, flappers, some with swim suits) that would be attending the bar.



## Settings

Location	Wallpaper + Flooring	Interactable Items (main)	Audio
Backroom	Brick wall; Dark blue tiles	Alto Saxophone	Rhythm Music (Level 1 for Happy + Cloudy) Nice chords: background music
Speakeasy Bar	Brick wall; Dark blue tiles	Piano, Alligator	Level 2 happy and cloudy songs trumpet/sax chords on repeat while wandering
Hallway	Brick wall; Wooden floors	Books, Charlie, DDR tiles	Hallway Music, Footsteps, DDR type game audio (ask in thursday meeting) / puzzle sounds
Greenroom	Patterned wallpaper; Wood flooring with a carpet	Pot of Gumbo	Rhythm game (Food Battle) for happy and cloudy (level 3) Ambient Noises before sound level, string sounds after rhythm game completed
Hallway 2	Same as hallway	Alto-sax, NPC's	Audience murmuring
Concert Stage	Curtain; Wooden floors; Audience	Walk in and starts (after cut-scene)	Level 4 (happy + cloudy) Audience murmuring (occurs before rhythm game)

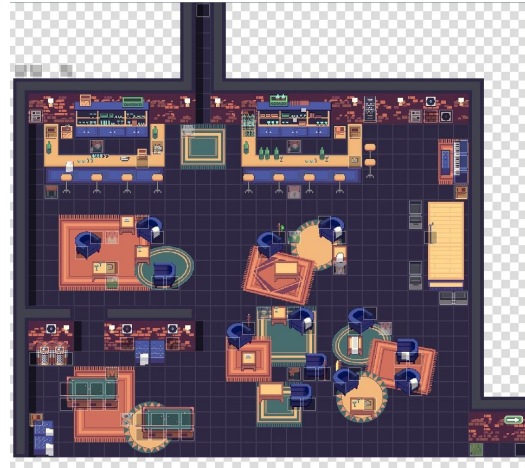
## Mock Layout of the Game:

A few rooms have been created in RPG maker (using the default tiles) to gauge the space and provide a visual for the artist.

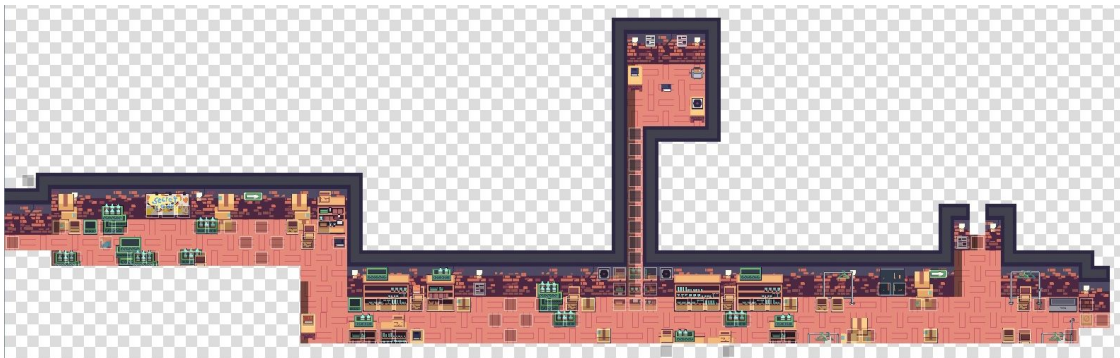
Backroom:



Speakeasy Bar:



Hallway:



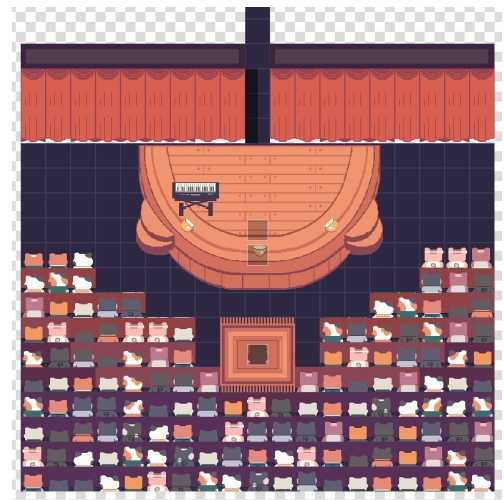
GreenRoom:



Backstage:



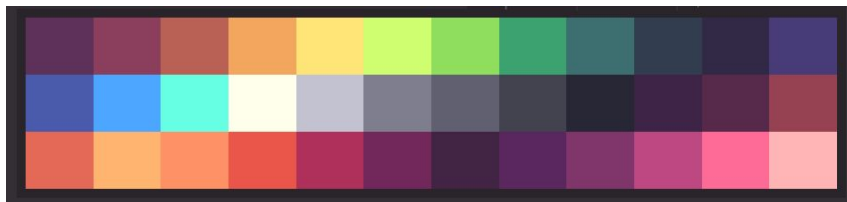
Final Stage:



## Visual

### Colour Palette:

The following 36-colour palette taken from Lospec are going to be used as the main source for the shades. The colours used are to be warm, simple and colourful, reminiscent of the bright and upbeat world of jazz.

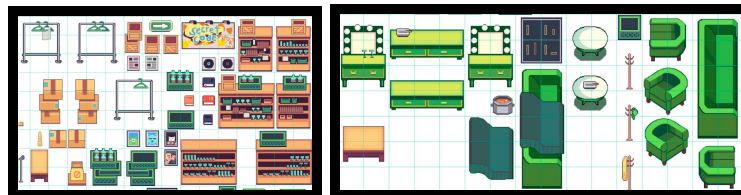


### Art Style:

Our art style is inspired by various cartoon designs such as Steven Universe and Adventure Time, etc. As well as several games such as Eastward, Dino Run, Gris etc. The game will contain different styles of art for the gameplay (pixel) and cutscenes (digitally rendered illustrations, motion graphics), both revolving around the same character design and layout. The characters and world are designed in a cute and chibi-like style with rounded features and accessories. Features will be simplified for the pixel version and detailed in the cutscenes to show the full range of our characters. Artists within our group are to create and stick to a single character design throughout the entirety of the game.

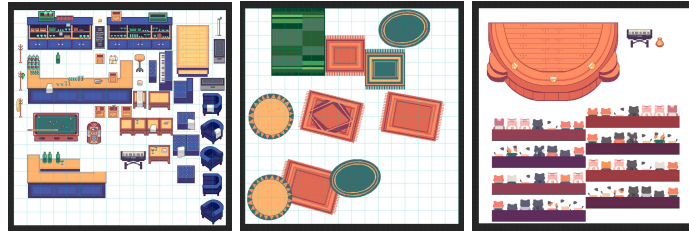
### Assets:

Backroom | Hallway | Greenroom



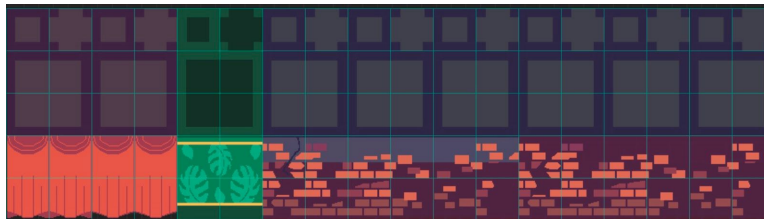
**List of items:** Clothing racks, crates, boxes, exit sign, Charlie's homemade poster, cabinets with miscellaneous items (glasses, notes, etc), lamp, tables, vanity tables, dresser, microphone, alto saxophone, books, posters, records, newspaper clippings, blanket, couches, pot of gumbo, caution sign

### Speakeasy | Carpets | Final Stage



**List of items:** Cabinets and bar countertops with miscellaneous items (glasses, boxes etc), bar stools, clothing rack, crates, stage, boxes, piano, keyboard, tables, couches, pool table, jukebox, beignets, lucky cat, menu (Easter egg), lamp, microphone, alcohol, variety of carpets, wooden stage with spotlights, Charlie's keyboard, sack, audience

### Wallpaper:



### Floors:



## Audio

### Songs:

#### Overview:

- Consists of two songs: easy and difficult that the player will interact with
- In each level, the player will interact with a layer of the chosen track in an order that increases in complexity
- 8 beat maps total (4 happy / 4 cloudy)
- **There are Four** levels for rhythm puzzle mechanic for each song
- Contemporary Music: with a jazz influence

#### Cut Scene Music:

- Goal: to emphasize aspects of narrative
- Details outlined in graph cutscene/writing section
- whimsical/ cartoony feel
- **Studio/Backroom Level**
  - Happy: simple drum line
  - Cloudy: snaps + simple drumline
  - Background: chords
- **Alligator Speakeasy Duel:**
  - Happy: vocals
  - Cloudy: drumline
  - Background: saxophone chords
- **Greenroom Level: Food Music Puzzle:**
  - Happy: drum line
  - Cloudy: guitar
  - Ambient background
  - Walking bass background
- **Stage Level: Performance Music Puzzle:**
  - Happy: saxophone

- cloudy : saxophone
- Background: stage audience chatter
- **Title screen song:** “disco-theme party song”
- **Credit song:** “in a dream” ft. Jonathan B.
- **Hallway Music:** “Hallway Music”
- **Cutscene Audio:** Listed in Graph Previous in Document
- **Win Sound:**
  - Saxophone happy riff that builds → clapping! Finished
- **Lose Sound:**
  - Heartbeat→ with heart monitor and eventual flatline→ add in one heartbeat/ fade out flatline sound → add in jupiter white noise for death’s appearance → finished

### Audio for Mechanics in Game:

- Dialogue blurbs
- DDR 4 Sounds
- Walking Sounds
- Background Sound for exploring Studio → just use hallway song for simplicity
- Sound for notes hit: BeatMap
- Sound for miss: BeatMap
- Food sound: gumbo gumbo gumbo, or BLurghg
- Interaction sound with objects in the world
- Choice samples for songs
- swoosh sound for death (ambient noise)
- “DDR” puzzle: 4 arrow sounds
- Alligator Encounter: (saxophone trill)
- Sound for Charlie Dancing in Hallway
- Bongo Sound for Interaction with Bongo
- Sound of Falling Sand Sack: Rip→ Fall → Hit



## Levels

### Emotional Aesthetic

A joyful feeling through romance and comedy by using Narrative and Absurdism.

### The Game has 4 levels:

- **Level 1: Backroom Tutorial**
  - Introduces a basic overview of the world in terms of mechanics, characters, and general atmosphere
  - Explore walking mechanic
  - Explore interactive features
  - First Rhythm Game: harmonica, simple melody with “skeleton” of final melody.
  - Hep Cat plays by himself (no enemy).
  - If wins (high score): gets “pride”.
  - If loses (low score): gets “shame”.
- **Level 2: Speakeasy Bar, Alligator**
  - Introduces the player to the threat of dying and to a sense of urgency
  - First level set up by death
  - Threat: Angry Alligator
  - Second Rhythm Game: melody becomes more complex.
  - Increase in difficulty.
  - Results impact the end of the game.
  - If wins (high score): survives, soothes the alligator (who joins the band as triangle player).
  - If loses (low score): dies.
- **Level 3: Greenroom**
  - Second level set up by death.

- Hep Cat can die.
  - Threat: Sentient food/food poisoning
  - Third Rhythm Game: melody becomes more complex.
  - Increase in difficulty.
  - Results impact the end of the game
  - If wins (high score): survives, soothes the sentient food, gets his notebook
  - If loses (low score): dies.
- **Level 4: Final Concert, “Boss Level”**
    - Third and final level set up by death.
    - Threat: Falling Chandelier
    - Fifth Rhythm Game: saxophone, full score.
    - Hardest difficulty.
    - Results impact the end of the game.
    - If wins (high score): enchants Death and survives.
    - If loses (low score): dies.

## MDA

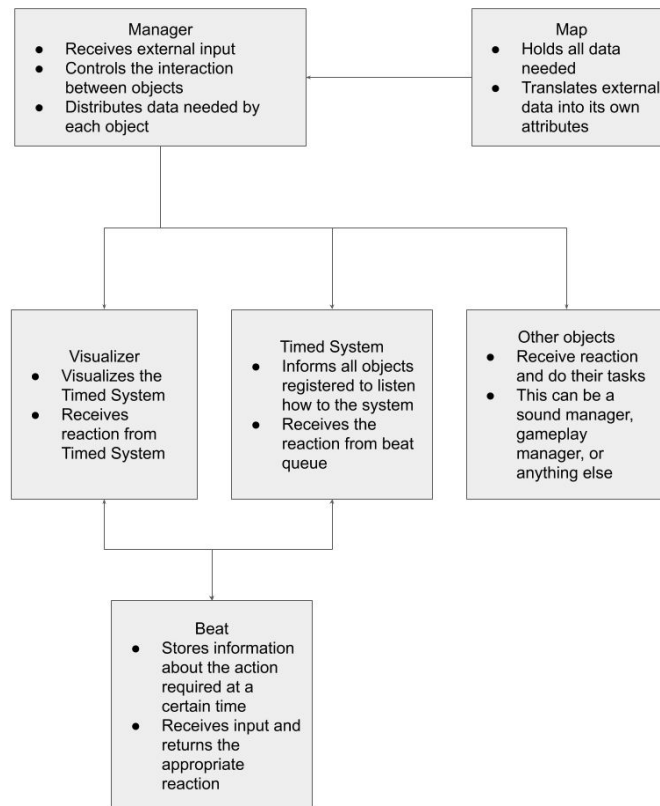
Mechanics	Dynamics	Aesthetics
<p>Rhythm game</p> <ul style="list-style-type: none"> <li>- A music staff with beats moving from right to left. Players will use WASD (keyboard) to hit the beats before it passes a bar in order to succeed the level. Success is based on a scale (positive points for the right notes and negative points for the wrong ones), If the player's score is above a certain threshold, they win the game</li> </ul>	<p>The player doesn't need to hit all the notes; will be based on player skill which notes are pressed.</p>	<p>The music will reflect the narrative and atmosphere of that particular room (Eg. The bar will have a more sombre and atmospheric feel)</p> <p>It will also provide a challenge if player on Hard Mode</p>
<p>Traversing through rooms and speaking to NPCs to proceed</p> <ul style="list-style-type: none"> <li>- Will allow players to explore the world and have various interactions with objects, puzzles and characters</li> </ul>	<p>Player may or may not want to interact with everything, resulting in different interactions</p>	<p>Engages the player's critical and emotional thinking</p>

## Programming

### DDR

- The *Dixie Dig Rhythm* is a puzzle wherein the player will have to step on certain tiles in the correct order, which will be found in the overworld through interactions with NPCs and objects.

### Rhythm Game



*Interaction between objects that makes the Timed System (the rhythm game) work*

## Beatmap or Map

One **beatmap** or map is a JSON file that represents the information needed to play a single primary rhythm game. It is a collection of objects that represent the timing per note, known as **beat**. It also contains other information that dictates global properties for every beat. It also serves as an interface for getting these specific notes, such as finding out what's supposed to be drawn or which the player should be currently reacting to. This was later added during the Vertical Slice 2 development as response to the increasing demands of differing global configurations per rhythm session that makes a map more than just a wrapper to a list of beats. Here are attributes that should be changed manually per map. Other attributes not listed below are auto-generated.

Attribute	Description
"audioFilename"	Prefix for the filename of the song in the bgm folder. For every rhythm game session, there are two layers of song: a background song and a beatmap song. The background song plays constantly and are suffixed with "Background"; The beatmap song plays at a variable volume depending on how consistent the players hit the rhythm and are suffixed with "Beatmap". For example, if your files are "Cloudy1Background.ogg" and "Cloudy1Beatmap.ogg", then the audioFilename should be "Cloudy1".
"mapEndTime"	When the elapsed time since the song has started surpasses this value in milliseconds, then when the game checks if Timed System is done, it answers that it is. This was a hack back when we could not determine when the song has finished. This is deprecated but kept in order to not break the game.
"passRate"	Pass rate is an array containing passing the passing rate(s). The current design of the game follows a singular passing rate, but we designed this as an array to future proof to possible multiple passing rates.
"screenTime"	Screen time decides how long the visualization of the beat moves from its spawning point outside the screen up to the hitmarker where player's should hit. Decreasing this increases the beat's speed, and vice versa.

"soundEffectList"	It is a dictionary of sound effect names. Currently, there are sounds for excellent hits ("ExcellentSound"), okay hits ("OkaySound"), bad hits ("BadSound"), and misses ("MissSound").
"tolerance"	An array of three integers representing milliseconds. The first element represents the +/- millisecond from the designated time where it is still considered an excellent hit. The second one's for good. The third one's for meh.

## Beat

Beats represent the timing of each note in the rhythm game. The object can also grade the player's input given an input and time from an external source. This allows beats to be testable since we can inject these values when testing.

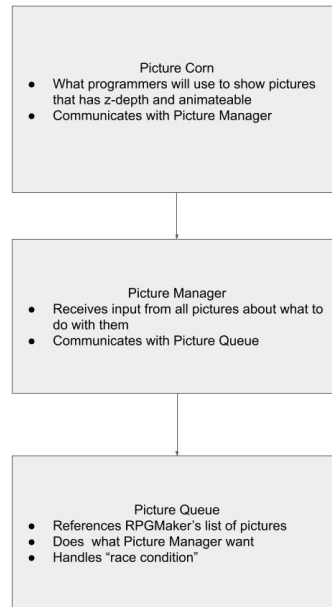
The programming object Beat looks like this in an external JSON file to be read by the game. A list of sequential beats is part of a programming object called Map. To create the rhythm gameplay, we have to manually create these maps. Every beat is made using the open source rhythm game *osu!*'s editor. We have a script to convert them into the same JSON file that the game can understand.

## Visualization

We had several issues with visualizing the beat in RPGMaker MV. If we use sprites, we'd have limited size and precision, but we get animations. If we use RPGMaker's default picture implementations, the depth of the object is based on the object's id and there are no animations for it. We're planning to use our own plugin which allows the following:

- Assign a z value to a picture and RPGMaker draws the overlapping images properly.
- Move objects to a precise location.
- Rotate objects to a fixed angle. In RPGMaker, you can only control the speed of the rotation and not the rotation of the object itself.

- The only feature left unimplemented for the plugin is to support animation. The current plan to implement this is by providing frames of images, and simply iterating through it in a certain or custom interval.



*Interaction between objects that makes the Picture Manager work*

## Composition workflow

We've set up a workflow with how we compose our beat maps and how we later parse it.

1. Prepare the mp3 version of the audio and an optional wav version of the sound effect
2. Open osu!, go to edit, and drag and drop the mp3 file.
3. Set up the metadata.
4. Go to the **Advanced** tab, and under the **Mode Specific** section, select **osu!mania** in the **Allowed Modes**.
5. Go to the **Difficulty** tab, and set the **Key Count** to 4. Click OK.
6. Set the BPM by clicking on the **Timing Setup Panel**. Add a **Timing Section** by clicking the big green plus button. Set the appropriate BPM, and click OK.
7. To add an optional sound effect
  - a. Go to File and click Open Song Folder.
  - b. Copy paste the sound effect here and rename it to **hitnormal-normal.mp3**.
  - c. Go to **Song Setup, Audio**, and check **Enable custom overrides**. Click OK.

8. Compose the song. As a rule we've set up, easy being limited to ½ snaps, while hard can have as many snaps per beat. Snaps are where the beat's timings are snapped, ensuring that the beats are on time with the music.
9. Go to **File**, and click **Export Package**.
10. A folder containing the osz file should appear. Move this to External/beatmaps/osz in the repository.

## Parsing rules and workflow

To parse the osz file:

1. Convert the osz file to a zip file by changing the file extension to ".zip".
2. Unzip this file.
3. Convert the osu file into a txt file by changing the file extension to ".txt". As a convention, rename the osu file to "map".
4. Go to External/beatmaps directory, and open the osumaniaparser.py. Change the variable filename\_in's and filename\_out's values. You only need to change the middle parts, e.g. the values are raw/%%%/map.txt and json/%%%.json; you only need to change %%%. Make sure to save this.
5. Open the command line under the same directory and run `py osumaniaparser.py`.
6. Check out External/beatmaps/json and find your JSON file. Open this file.
7. In the section **Beatmap or Map**, the manual attributes are discussed. Change these values. Unminify the JSON file such that every individual field name takes up one line to help change these values and track changes.
8. Copy this JSON file to Hep Cat/cornflour/maps.

## Rhythm plugin usage

The plugin is considered a hack and does not abide RPG MakerMV's standard plugin usage. Here are the following steps to use the plugin:

1. Set up CornField. CornField handles the visualization per stage. Each stage has different implementations, so there are different subclasses that implement these variations. For our game, we have four different subclasses.
  - a. Call `CornFieldBackroom.setup()` ; for the first rhythm stage.
  - b. Call `CornFieldSpeakeasy.setup()` ; for the second rhythm stage.
  - c. Call `CornFieldGreenroom.setup()` ; for the third rhythm stage.
  - d. Call `CornFieldStage.setup()` ; for the fourth rhythm stage.
2. Call `CornFlour.initialize(filename)` ; Filename is a string which represents the name of a JSON file found in cornflour/maps. This JSON file should follow the **parsing rules** discussed before this section. This filename should not have a .json suffix and should only be the name.



3. Initializing takes time, so set up a while loop which breaks when `CornFlour.isPrepared()` returns true, meaning that the rhythm game map was successfully and completely loaded.
4. Call `CornFlour.start()` ;
5. Set up a game loop which calls

```
CornFlour.start();
$cornField.updatePicture()
```

and breaks when `CornFlour.isGameOver()` ; returns true.

6. Call `CornFlour.clear()` ; for clean up. This should always be called after every rhythm game.
7. `CornFlour` saves the information about whether the game considers the play a fail or pass. Use `CornFlour.didWePass()` ; anytime after finishing a game and before starting a new `CornFlour` game.

## Plugins

We will be utilizing a number of free plugins made by various developers: Yanfly, Terrax, Galv, Dmytryk (Dmy, Demetrius), Sasuke KANNAZUKI.

On top of that, we have custom plugins developed specifically for Hep Cat. They are as follows:

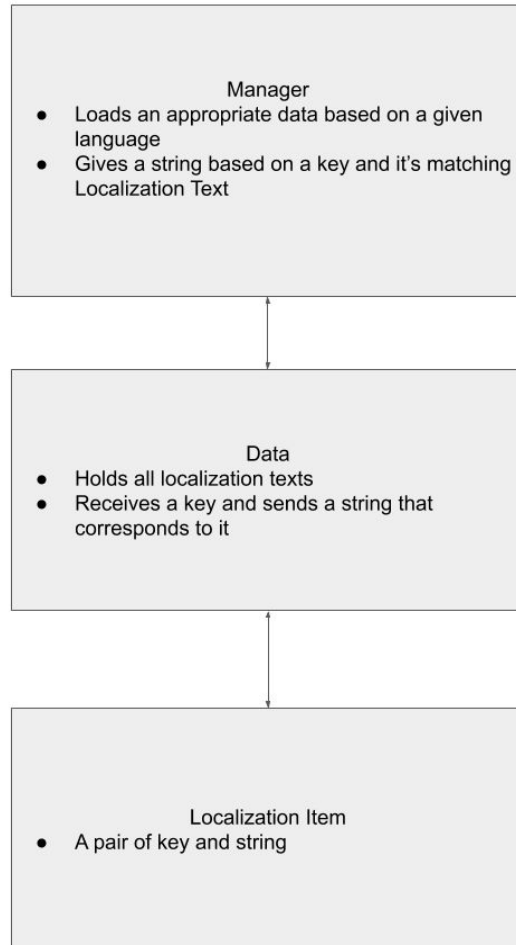
1. CornFlour - Handles everything regarding the Rhythm Game mechanic
2. CornField - Handles visual initialization of the Rhythm Games
3. GreenCheesecake - Provides an alternative Audio Manager that synchronizes multiple music files
4. HelpfulDaikon - Utility functions
5. Pretty Corn - Wraps RPGMaker MV's `Game_Picture` and `Game_Screen` for ease of use
6. CornPesticide - Debugs critical functions that required refactoring and other changes for several of our custom plugins
7. WheatFlour - This plugin is a compilation of smaller implemented functionalities:
  - a. Edited pause menu
  - b. Dialogue nametags

- c. Changeable key mapping
- d. Piano key mapping
- e. Intro logo and cutscene videos

## Stretch Goals

One of our stretch goals is to provide localization. This is one of the risky features we want to ship with the game. Here are the challenges for this feature:

- The writers will have to provide a key in every instance where the text should show, and they might have a hard time knowing what's the corresponding text for each key.
- The likelihood of error both in typing the keys and texts is likely, and we have to consider how we can reduce these errors.
- Structures between languages differ, so we may have varying needs of variables for each language's texts.
- Texts in images cannot be translated. Visual artists should know about this early on. Fonts may be an option for this one.



*Interaction between objects that may make Localization Manager work*

### Third party software / plugins

osu!

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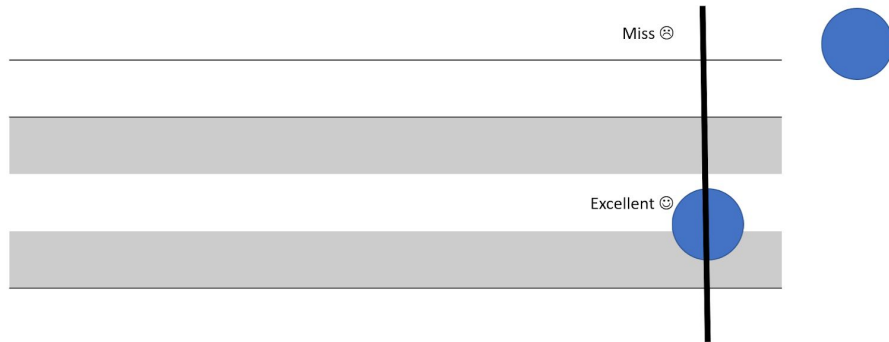
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RPGMaker MV Intellisense

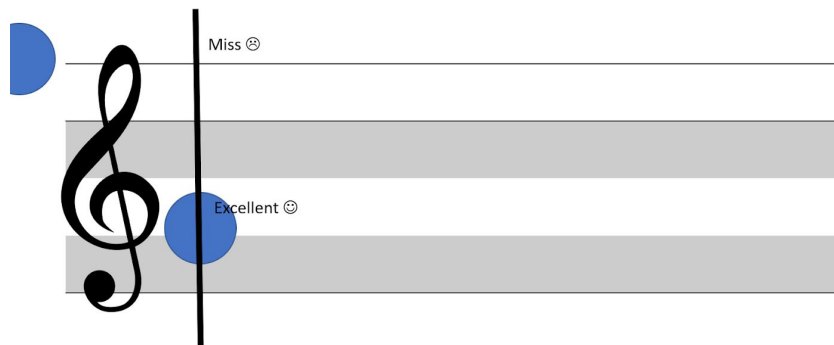
Link: <https://endlessillusoft.com/>

## Prototypes

Other prototyped rhythm visualizations:



Notes would run from left to right and player's have to act when these notes overlap the line.



Notes would run from right to left and player's have to act when these notes overlap the line

## Production Timeline

Note: Bold dates are external milestones

Date	Milestone	Time Estimate and details
<b>Jan 27</b>	Design Document	Living document handed in by Jan 27th
Jan 28	Sample Music Finished and Shared	<p>Our Musician will be working on some samples which correlate with her style and what she understands we want.</p> <p>We want to have lots of sessions with our musician because of the music heavy aspects of the game.</p>
Jan 30/31	Finish core mechanic	<p>This should be at least at working quality by the 30th or 31st. This is to allow programmers and artist to have time to discuss what specifics they need to add graphics and how it works.</p> <p>Prototyping must occur between these time periods!!!</p> <ul style="list-style-type: none"> <li>- Pen and Paper method!</li> <li>- Layout ideas</li> <li>- Make sure the music and program work very well with this</li> </ul>
Feb 1	<p>Finish main character designs and some tilesets *</p> <p>*No need to be super detailed because the theme of our game may be shifted.</p>	<p>Only two main characters:</p> <ul style="list-style-type: none"> <li>- Hep Cat</li> <li>- Death</li> </ul> <p>These two will need to be fleshed out so that they can be used in the prototypes we make later on.</p> <p>Floor and wall panelling should be the focus. Assets can also be worked on ( Mostly only on one 'room' in the game)</p> <ul style="list-style-type: none"> <li>- Need to fit the theme of our game (warm colours, 1920's inspired)</li> </ul>

		These assets, when in progress must be shown to other members to get feedback.
Feb 3	Have one song finished for room used in VS 1	Before this date, there must be multiple meetings, listening and iterations done on the music <ul style="list-style-type: none"> <li>- Make sure all members have heard the resulting songs</li> </ul>
Feb 3	Basic Storyboard will be created	Basic outline of story will be finished by this time <ul style="list-style-type: none"> <li>- ALL MEMBERS MUST READ THROUGH AND GIVE FEEDBACK</li> </ul>
Feb 12	Internal VS 1 deadline	All pieces need to be completed. Play testing and polishing of primarily the <b>main mechanics</b> will be the main focus
<b>Feb 14</b>	Vertical Slice 1 and Feedback	We have about 2 weeks from Jan 27th to work on this. Here is what we need to accomplish for this: <ul style="list-style-type: none"> <li>- Develop core mechanic (Focus on POLISH)</li> <li>- Have main characters fleshed out</li> <li>- Have tilesets developed for selected sections</li> <li>- Have music for chosen room developed</li> <li>- Have song for at least chosen rhythm game created</li> </ul>
Feb 15 - 17	Implement feedback and reshape game	After the VS 1 we need to talk about, implement and polish up what we have already created.  If certain aspects of the game need to be scrapped/re-made, we must all come together and discuss this at this time period
Feb 18-28	Work towards finishing game	After VS1, we have many changes to be made. They can be seen in the VS1 document. We will work towards fixing what has been stated.  Design: All levels (currently 5) will be mapped out and designed <ul style="list-style-type: none"> <li>- Must be talked about with the whole</li> </ul>

		<p>team</p> <p>Programmers: Main and side game mechanics will be polished!!</p> <ul style="list-style-type: none"> <li>- DDR tiles are in working condition, but need to be polished (eg. the player can move when Charlie walks away)</li> <li>- Rhythm game must be polished (provide player feedback to show results, etc.)</li> </ul> <p>Art: Almost all art assets will be made (character designs and tilesets)</p> <ul style="list-style-type: none"> <li>- Programmers and artists must work together to discuss plugins which may be implemented to emphasize atmosphere <ul style="list-style-type: none"> <li>- Currently working towards making a mist effect in the GreenRoom</li> </ul> </li> <li>- Story: Story must be polished and cohesive <ul style="list-style-type: none"> <li>- According to VS1, it must be shortened.</li> <li>- Use more effects to showcase story (programmers must get on this)</li> </ul> </li> <li>- Music: All sounds/ music for game mechanic will be mostly completed by this time</li> </ul>
<b>Feb 28</b>	Vertical Slice 2 (with instructor) and Feedback	<p>Game must be almost complete at this point (in terms of mechanics, smoothness of gameplay and flow the player feels while playing)</p> <p>After VS 2, we will all discuss what feedback we receive and what we would like to change about it.</p>
Feb 29- Mar 12	Work on Final Project	Will work on implementing V2 feedback and creating a polished and complete experience



Mar 13 - 20	Beta Release and Peer Evaluation	<p>The game must be complete by this stage (in all its main components)</p> <p>We will use the player evaluations to identify any break in flow, bugs, etc.</p> <p>(We must refer to the grading rubric for this at an earlier time to be consistent with updates, scope, etc.)</p>
Mar 23/30	Game Trailer	<p>Must meet the 5 specifications outlined on eClass</p> <p>(EP must view before submission)</p>
Apr 9	Gold Release	<p>Final Game Executable will be submitted!</p> <p>(EP must play before submission)</p>

### Minimal Project Outcome

We want to have at least 4 levels completed before we try to juice the game. This is to make sure we have a coherent storyline which we can polish by the time we get to gold. This will include:

- Backroom, Hallway, GreenRoom and Final level.
- 4 songs which must be polished and edited throughout the semester.
- Complete art assets for each of these rooms.
- Compelling gameplay for each room:
  - Puzzles in the hallway
  - Polished Rhythm game
  - Compelling story (fun NPC dialogues and good flavour text)

### Risks or Challenges:

We have two main risks in the game:

- Creating a smooth rhythm game
- Since each room is very stylized, creating all the art assets and custom cutscenes for the rooms

## Uncategorized Ideas

These ideas are part of a **wish list** for our game, as well as ideas **tossed** in lieu of the timeframe.

- Language localization (translate the game into Brazilian Portuguese). Oh, what a wish!
- Within the main game mechanic, provide players various choices to change the main song, thus requiring multiple songs
  - Have the players press keys and make their own song, give them a free reign; the game mechanic would have to remember that rhythm and use it throughout the game
- Pokemon battle scene for nyan cat? Exclamation mark on head?
- Different font styles for characters?
- Different text boxes?
- In Easter E.G.G. room, have replayable levels! Serves as practice and fun!