Twilight Core

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# Functional specification

## Style of the game

This game is a danmaku (bullet curtain shoot 'em up) game. Much of the gameplay relies on surviving a curtain of bullets shot by waves of enemies while powering up the character by collecting various points left by shot enemies. Additionally the player's weapons (Day Core & Night Core) can be upgraded to improve basic attributes and the damage done by their special attacks (bombs). Every stage features many enemy waves, often interrupted by a mid-boss with more complex patterns and the stage ends with a boss-battle with many bars of hit points to deplete and many phases of different bullet curtain patterns.

## Player mechanics

### Combat

Player is able to continuously shoot upwards approx. 10 bullets per second

### Core

Core is a weapon that has passive abilities (shooting power and score multiplication) and an active ability (bomb). When the bomb is used or the player is hit the Core bar depletes and the Core powers down.

### Focus Mode

Changes the core in use from Day Core to Night Core and the passive abilities that come with the core (magnetic point collection, slower movement speed for accurate dodging)

# Ideas

## Setting

The setting heavily relies on Hindu/Vedic mythology and Indian cultural motifs. The story is constructed on top of stories from Hindu/Vedic mythology with a creative variation here and there. The narrative is from the main character's perspective as she journeys through the undiscovered realm.

## Premise

Every world has its own Chandra, a guardian of its solar rhythm. Soma is a Chandra of this world, tasked to guard the Day, Night, and Twilight Cores, all responsible for the phases of the day. Soma is also an avid pumpkin farmer and developed the hobby to battle her daily monotony. One day she thought “I wonder if my pumpkins grew a bit fatter if the day lasted just a tiny bit longer” and decided not to activate the Twilight Core that night. To activate a core, she needs to hold it to its pedestal for a moment and the phase of the day changes. After she’s done, she puts the cores into her hat. As the sun was to set, she was measuring her pumpkins on her yard. She feared that reality would break but alas, it didn’t. As she was crawling on the ground her hat fell off and the Twilight Core rolled out. Suddenly an Asura appeared from the woods and snatched the core, and ran off. Soma screamed and grabbed her broom in pursuit, planning to use the Day and Night cores to defeat the Asura.

### INTRO

“Any world that rotates, gets their own guardian, a Chandra.”

“The solar rhythm of this world has been trusted to a young Chandra named Soma.”

“To battle the daily monotony of maintaining the Cores she picked up a hobby: growing pumpkins, overly obsessing over their size and quality.”

“One day she thought it was a good idea to see if they grow a little larger if only the day lasted a little longer…”

“The cores of Day and Night in her hat stayed intact when she crawled in the patch and dropped her hat.”

“But the Twilight Core was stolen by quick hands…”

## Plot

The Lordess of the realm of Asuras has opened pathways to the regular world and sent Asuras to fetch her a mystical item, “The Twilight Core”. But by removing it, the world stopped seeing sunrises or sunsets, only perpetual night or day.

You are Soma, a happy-go-lucky witch, a pumpkin farm owner who loses her Twilight Core to a thieving asura.

Soma tracks the Asura who stole the core and follows its path to a forest that is guarded by Maaya, a Friendly Huldra.

After defeating her, Soma travels deep into The Black Forest where Joanette, the Queen of Spiders is helping the Asuras open pathways between worlds. Soma defeats her and follows the Asura through the pathway.

In the Asura realm Soma is flung to a river from the portal. After shaking herself dry she follows the riverbank and catches up to the asura who tries to use the core against her again. She chases it away and meets (Boss3), a commander of the asuras.

Soma enters a lotus garden of the (Boss6) temple where she meets (Boss4/Lakshmi).

Stage 5 signifies the various layers of the temple (Asura, Human, Deva, Brahma). Soma makes her way to the middle and meets (Brahma) who’s given (Boss6) a boon that makes her immortal. (Brahma) doesn’t think Soma is suitable to mess with deity business so she has to defeat her.

After proving (Brahma) wrong she teleports Soma to an astral plane, a courtyard beyond the temple. Soma lures out (Boss6). After Soma survives her initial attacks, an avatar appears and knocks the core out of (Boss6)’s hand, and Soma catches it. (Boss6) is now vulnerable and using the Twilight Core Soma is able to defeat her.

Afterwards Soma returns to her realm to enjoy the sunsets and sunrises again.

## Stages

1 - Asura’s Path

*BGM - “Asura who remain Asura”*

Soma follows an asura that has stolen the Twilight Core. After pursuing him for a while, dodging all the gandharvas that are adamant to stop her advance, she encounters the boss of the gandharvas who has been asked by the spider queen to let no one enter the forest while her rites are on.

#### Environment

Fields, pumpkins and a fenced road with trees on the side. Sunny day

#### Enemies

Forest Guardian’s minions, various Gandharvas (bird,)

* Boss 0.5: Asura
  + Special: Twilight Core: Depulsio
* Boss 1: Maaya, Forest Guardian (Fox Gandharva)
  + BGM: Sweet Trickster

2 - The Black Forest

*BGM - “Spelunker”*

Soma proceeds to the forest when she notices a twilight leak. She follows it deeper to the forest where she meets a Spider Queen who is opening portals to the asura’s realm. She defeats her and travels through a portal.

#### Environment

Thick woods, red lights between. Dark lighting

#### Enemies

Some gandharvas, Spider Queen’s squires

* Midboss: ??
* Boss: Spider queen
  + BGM: Void Dance

3 - Riverbank???

* Midboss: Asura

Lotus Garden4th stage and boss? Asura

* Boss: Lakshmi

Hindu TempleMain character meets (Brahma) who’s given the final boss a boon that makes her immortal. (Brahma) doesn’t think the main character is suitable to mess with deity business so she has to defeat her. After defeating (Brahma) main character acquires a power from her to temporarily change day or night to twilight to kill the final boss. (Twilight Core)

* Boss: Brahma

### Temple Courtyard

## Characters

### Player Character: Soma



Every world has its own Chandra, a guardian of its solar rhythm. Soma is a Chandra of this world, tasked to guard the Day, Night, and Twilight Cores, all responsible for the phases of the day. Soma is also an avid pumpkin farmer and developed the hobby to battle her daily monotony. The story starts when she loses the Twilight Core to a thief and is desperate to get it back to restore the balance of the world.

### Boss 0.5 - Asura

* Twilight Core special second phase
* "Asuras who remain Asura" share the character of powerful beings obsessed with their craving for ill-gotten Soma, and for wealth, ego, anger, unprincipled nature, force, and violence. Further, in Hindu mythology, when they lose, miss, or don't get what they want (because they were distracted by their cravings) the "Asuras who remain Asuras" question, challenge, and attack the "Asuras who became Devas" to loot or extract a portion of what the Devas have and the Asuras do not.

### Boss 1 - Maaya, Forest Guardian



* Maaya (Māyā connotes a "magic show, an illusion where things appear to be present but are not what they seem")
  + She pretends to be a human but is a fox. But her tail gives her away
* Fox tail
* Guardian of the forest
* Spear
* Spell idea: spiral spears
* hard to catch, teleportation
* fox fires: slow cluster bullets
* Huldras are usually said to be very self-conscious about their tail and back, and attacks anyone who points them out.

### Boss2 – Joanette, the Spider Queen



"In the Vedic philosophy of India, the spider is depicted as hiding the ultimate reality with the veils of illusion.”

“Indra's net is used as a metaphor for the Buddhist concept of interpenetration, which holds that all phenomena are intimately connected. Indra's net has a multifaceted jewel at each vertex, and each jewel is reflected in all of the other jewels”

“In some schools of Buddhism and in Hinduism, the image of Indra's net is a metaphor for the emptiness of all things, and at the same time a metaphor for the understanding of the universe as a web of connections and interdependence”

“If a person comes into contact with a Live spider by default, he or she will get new clothes as per local belief in Hindu customs.”

Spider Queen is opening portals to the asura world, symbolizing Indra’s Net and its connectivity.

* Basic phase 1: small web clusters, homing arrows, spiders
* Basic phase 2: shoot laser webs, slow spider bullets
* Spell 1: Indra’s Net
  + Maelstrom spiral + Giant spiderweb with big rotating bullets spawned in a circle
* Final spell: Void Dance
  + Starts opening a white void behind her (serving as the portal the player goes through to the next level)
  + Otherworldly bullets come out of the void while boss shoots homing bullets the player has to dodge rhythmically

### Boss 4 – Lakshmi

Lakshmi in Sanskrit is derived from the root word lakṣ (लक्ष्) and lakṣa (लक्ष), meaning 'to perceive, observe, know, understand' and 'goal, aim, objective', respectively.[29] These roots give Lakshmi the symbolism: know and understand your goal.[30] A related term is lakṣaṇa, which means 'sign, target, aim, symbol, attribute, quality, lucky mark, auspicious opportunity'.[31]

# Mechanics

## Player

* Day / night core meter
* Day Core: Starlight special
  + Star bombs explode in different places, destroying enemies and bullets
* Night Core: Trick or treat
  + Pumpkin shaped field consumes all bullets around player
* Add life gen points? or just extra lives
* Both cores deplete if special used when hit
* Cores can be leveled with exp points
  + Boosts up the special OR makes passives better
  + Night Core boost: spawns additional rotating pumpkins to magic circle

## Score system

* Certain score threshold yields an extra life?
* Scorepoint multiplier from core levels?

## Controls

* [Arrow keys/WASD ] – Move
* [Z] – OK/Shoot
* [X] – Special attack
* [Shift] – Focus/Night mode
* [ESC] – Pause Menu / Back out of menu

# Development

## Goals for 0.1.0 (2016)

* User is able to play through the game (at least 1 stage)
* Character selection screen
* Local scoreboard
* Options menu
* Stage ending
* Mid-bosses
* Pause menu

## Goals for 0.2.0 (2022)

* Stage 2
* Score Bonuses on stage end
* Local scoreboard window
* Options menu

## Goals for 0.3.0 (2022)

* Plan out overacting plot / concepts / art
* Revamped player shoot levels
* Pickup zone top of screen
* ~~New 3DEnvironment prefab~~
* Stage 1+2 Basic enemy sprites

## In development 0.2.1

FIXED BUT CANT CONFIRM

BUG BUT CANT CONFIRM

URGENT, IS BROKE

PRIO FOR GOAL

SUGGESTED

MINOR

**DESIGN**

* Sprites for stage1 + stage2 basic enemies (gandharvas)
* void portals in front of playerprojectile + pickups. This good or bad?
* Hit cooldown for bosses? / problem is that minitoasts stack up jarringly
* Make smoothly curving movement pattern (slerp)
* Boss pattern difficulty balance broken
* More dynamic boss bonuses phase by phase
* Boss health balance broken (health by phase?)
* Pickup SFX
* Boss death SFX
* add color tint to night special
* show boss spell name at all times
* Smaller spider bullets
  + I’m gonna redo a lot of stages 1-2 anyway so this can wait

**TECHNICAL**

* destroy enemy homing bullets if speed is too low for too long
* indra’s net animates even if phase over
* void dance pattern starts before boss is in place
* pickup points & bullets stop at pickupthreshold
* Might need a separate inputhandler to check for loading, paused etc
* Make a copyvalues func for BMPs like in EMPs
* Make day/nightcore caps bigger so enemies can drop more loot but it’s still balanced
* Rework animation routines(future me: what does this mean???? Refactor? Optimize??)
* Divide gamectrl components into children for readability?
* Debug problem, but boss special box doesnt have a max pos so it moves too much when spells cast too quickly
* intro text explaining the start of the plot

**See if possible / necessary:**

* restore pacman pattern (not even close to be finished)
* looping boss bg music from a certain point
* heroku database for global hiscores
* music box menu for game music(DON’T EVEN THINK ABOUT IT YET)
* twilight points -> temp invulner when hit, “Bomb escape system”
  + was considering that it’s easy to do with just timescales but see if it’s possible to input anything in low scales

**Terra Feminarum notes ( 30.5.2022)**

~~At least partly implemented~~

* Think of more interesting bullet shapes relating to the enemy/environment
  + More bullet cluster designs
  + Negative space bullets (forced path) (this almost exists as the broken pacman pattern)
  + 3D bullet patterns
* ~~Player max power fill screen with bullets~~
* More range for player bullets allows lots more simultaneous waves
* More different patterns into a single phase /spell + sfx for small events
* ~~Get power points during boss fight~~
* More elaborate enemy movement patterns and longer paths (waving, loops + such)
* Other bullet sources than shooter (specifically in boss fights)
* ~~Boss patterns have timeout if taking too long~~

### UNITY NOTES

* Sprite color can’t be controlled by renderer
* Unity limits fps by default
* If enemyspawner breaks, make sure stagetimer zeroes before stage begins

## Diary

### 0.1.0

* Player movement inside the play area
* Player single projectile shooting
* Player special attack system (kills everything hostile on screen)
* Player hit detection, lives, life reduction
* Player invulnerability function and animating
* Gameover handler on player die
* Restart function on gameover
* Enemy spawner and wave timer handler
* Stage timer
* Enemy movement with patterns
* 2 Enemy bullet types (homing/nothoming)
* 2 Enemy bullet patterns (single, scaling circle pattern)
* Boss enemy derived from normal enemy
* 2 boss phases that change according to health
* Exp point objects created on enemy die
* Exp point hit detection on player
* Player exp gain function
* Parallax tile scroller
* Sprite placeholders for player,enemy,playerProjectile,enemyProjectile,expPoint
* MainMenu with title textholder and start button
* GameOver screen with overlaid images and button to restart
* Player lives text indicator
* Player exp/expCap text indicator
* Player special core image indicator
* Boss life slider indicator
* Stage timer text indicator
* Current stage text indicator on stage start
* Current wave text indicator
* Stage completed indicator on boss death
* Dialog UI
* Singleton gamecontroller
* Can switch between attack types
* Sound controller
* Stage initializes when navigating from main menu
* Xp accumulates stat points that can be spent on power, speed or life generation
* Wave class
* Bullet pattern class
* Made creating wave types and patterns more easy
* Redid dialog system
* New bullet pattern: spiderweb
* Bullet movement class
* New bullet pattern: giant web
* Visible player hitbox
* Add new projectile art
* Concept art of first boss
* Bullet animations (spiderweb)
* Singleton UICanvas
* Multiple boss healthbars
* Special Charge Slider
* Rescaled exp point collider for easier collection
* Core charge points
* Special attack triggers when core meter is full
* When all projectiles are destroyed they turn into core points
* Stop stage timer when enemy encountered
* Upgradable stats affect bullet behavior accordingly
* Player special attack draft
* Programmer art for boss X pos indicator
* Indication of boss healthbars
* Added boss name indicator
* Added boss X position indicator
* Boss pattern toast when “super phase”
* Special attack toast
* Fixed next wave spawn time not checked correctly
* Can programmatically switch stage
* Magnetic collection of points
* Reworked enemy spawning
* New bullet type: laser
* Simultaneously spawning enemies
* Waves now refer to an arraylist of spawnpositions
* Added new movementpattern to center enemy horizontally
* Waves can spawn almost simultaneously
* Boss specific patterns have identifier
* Fixed boss movementpattern and pattern referencing the same old one (create a new pattern from template if used more than once)
* When enemy dies all bullets shot by that enemy are destroyed
* Added focus mode -> hitbox becomes visible, player movement speed halves
* Can’t collect points while special attack is on
* Magnetic range activates now only in focus mode
* Fixed boss healthbar resetting when next healthbar
* Boss phases change top layer of background
* Toplayer alpha fading out/in
* Core charge bar depletes when special attack uses
* New Phase class to handle multiple simultaneous patterns
* Boss damage resistance when super phase
* New bullet pattern prototype: spiral
* Boss special phase handling moved to Phase class
* Boss pattern shooting is handled in Phase
* Phase turned into monobehaviour
* Tweaked giantweb pattern so that each layer has less bullets
* Tweaked enemy movement speed and acceleration to be a little faster
* Tweaked enemy movement patterns to wait until target position is reached instead of seconds for easier movement speed tweaking
* Library for bullet sprite types
  + + Set sprite function (shape, effect, color)
* Enemy movement pattern handling moved to phases
* Phasing loop condition recognition hotfixed with force break while
* Bullet acceleration
* New pattern “weave” shoots lasers (boss1)
* Initial Boss art (boss1)
* First static sprite for boss1
  + Added sprite setting function to library
* Created a 3D environment for later graphical testing
  + + Lightsource
  + + Perspective camera
* Boss music played when boss battle
* Patterns reference phase when checking if should end
* Removed unnecessary multiplier from enemy movement speed calc
* New bullet pattern: curtain
* New bullet movement: find player mid-movement
* Magnetic range now permanent, scales up/down when focus/no focus
* Everything resets to Stage 1 start at restart
  + Full reset
* Transition to next stage works
  + Soft reset
* Added boss identifies to wave
* Patterns customizable from phase class with a function
* Can clear 2 stages
* Phase execution finally responsive
* New movement style: Teleport
* New movement pattern: Swing (rotates around centerpoint)
* As shooting patterns ,enemy movement patterns also have a customization function now to reduce the need for pattern cases if not recyclable
* Enemy sprite flips according to movement direction
* Enemy sprite float in place animation (to be patched)
* All projectiles are destroyed when player takes a hit
* Started concepting a new boss
* New bullet art: spear
* Widened play area
* Unity bug caused left arrow not to work
* Enemies grant less core points, destroyed bullets grant none
* Statpoints are powered up when meter threshold reahed
  + Toast appears when powered up
* Fixed stats not resetting when restart
* Fixed boss namepanel not resetting when restart
* Pause function
  + Restart at pause menu
* Character spawns weapons when powerup, loses them when powerdown
* Focus mode now focuses the weapons
* New bullet pattern: Cluster
* New bullet art: fireball
* New programmer art: boss 1 sprite
* New programmer art: speech bubble
* Tweaking dialogue graphically
* Programmer art for weapons (pumpkins)
* Added sound effect for enemy shooting
* Layover graphic for core meter
* Added char selection screen
* Menu translated to keyboard
* Menu selection controllers
* Made stage 1 rough music
* Started designing stage 1 spawns
* Stage Handler handles all stage events
* Mid-boss template
* Mid-boss comes, shoots and goes
* Homing weapon for player
  + Finds nearest enemy
* Player Night Core Special: Trick-or-treat done
  + Null field that destroys all bullets and enemies inside
* Core meter redesigned to have two sides
* New core points: Night core points, Day core points
* Visual indication of which core in use
* Starlight special attack base
* 3Denvironment camera layer
* Tree sprite testing for 3Denvironment
* Parallax can be handled from stagehandler routine
* Pause menu translated to key input
* Added environment camera movement and rotation
* Stage environment duplicated 2 times so camera can move lower
* Reworked menu controller to check context when menu is opened
* Stripped down coroutines that broke the initialization
  + WaitUntils are not affected by timescale changes
* Level now restarts and initializes perfectly
* Acceleration/deceleration on environment
* Added template for stage end
* Added score gain for corepoints with multiplier
* Visual indication for score and hiscore

### 0.2.0 (2022)

* Refactored and reformatted the project
* Decoupled a lot of components from GameControl and UI
* Fixed stage initialization after restart
* Inherited boss phase routines from Phaser so it doesn’t get crowded
* Upscaled stage canvas
* Changed all normal textassets to TMPro
* Added toggleable invulnerability indicator to boss hp bar
* Moved boss init from enemylib to stage init
* Added a difficulty modifier to stage init that affects enemy shootspeed and bullet count in patterns. Difficulties 1, 3, 5, 7
* Added a difficulty selection screen to main menu
* Fixed character movement speed, wasn’t using deltatime so it was different between dev and build
* Fixed midboss timer
* Moved stagehandling routines from handler switch to their corresponding files
* Handle stage switching by reloading the same scene but swap scripts
* Reworked dialog handling to be more flexible
* Made options menu with Autoscroll toggle, BGM and SFX volume control
* Added gameover menu
* Options JSON save/load
* Added options menu to main menu
* Hiscore JSON save/load
* Damage gives score
* Spiral pattern spawned too slowly on build because Unity was limiting the framerate. Added unlimiter and disabled vsync in Game.Start();
* Disabled scoresave for now, crashes build because of the path path
* Upgraded old spider boss script (stage2), added new boss music
* Added a SaveLoadHandler.cs to handle i/o
* Added persistent data path to save/load so build doesn’t crash
* Added default settings to fall back onto if options file not found
* Major resource folder reorganizing and dependency fix
* Stagetimer didn’t reset correctly before, that’s why enemyspawner kept bugging out
* Optimized dialog ui handling, edited boss1 dialog
* Restored GiantWeb-pattern for Boss2
* Restored SmallWeb-pattern for Boss2
* Restored Laser-pattern
* made a crawling spider bullet for boss2 phase2 with a “wave” movement pattern
* StageComplete checks for pickup points before handling end
* Default BulletMovementPattern set to “Explode”
* Restructured phaser class
* Separated patterns into their own classes
* ScorePanel UI made to mainmenu
* Scoresaving on gameover and gamecomplete
* Lives persist through stages
* Boss special for boss0.5
* Separated bulletmovementpatterns into their own files
* Separated many different ui modules to their own files for readability (uictrl 1000+ lines -> ~150lines)
* Visual minitoast for scoreget, corepoint, xp point
* XP points now grant lives after reaching cap
* Score bonuses at stage end
* Boss1 BGM
* Added homing spears as fluff to Boss1 phase2
* EnemyMovement overhaul, enemymovementpatterns (EMPs) now in their own files, made simple pos change a lot less convoluted
* Made a grid system for determining enemy positions
* Made a smoothly translating movement option
* Finished stage2 design
* Finished boss2 design
* Added a colored fx layer for fadeins from white and black
* Added forcemove() for player for stage2 end
* Made PickUp points accelerate towards the hitbox so they don’t drag behind
* Visual indication for available bombs to core meters

### 0.3.0 (2022)

#### 0.2.1.1

* Widened play area (+1 grid, allows centering), widened environment and adjusted UI to play area width
* Enemylib became obsolete, moved stagewaves to stagehandler and vectorinfo to new VectorLib class
* Reworked player shooting, more levels, scale and range to bullets. More player shoot speed, reworked shoot level calculation from core levels. New starbullet as normal bullet

#### 0.2.1.2

* Reworked player day core bomb
* Boss phase timer and phase timeout
* BossLife class inherited from EnemyLife

#### 0.2.1.3

* Experimented with a full 3D terrain but looks off + adds bloat
* Point pickup zone at the top of the screen (with no requirements)
* Allowing input during restart loading executed func repeatedly. Now fixed with check
* Added start lag for dialog so spamming Z won’t skip it entirely

#### 0.2.1.4

* Separated bullet sprite and glow sprite, made base bullets smaller
* Can set bullet size while setting sprite (1-5)
* Fixed pickup point movement