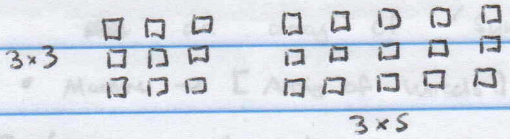
Slot Machine Rogue-lite

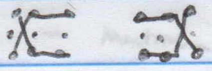
- Game very similar to Balatro, but with a slot machine
    - Standard Slot machine Reels and Scoring



Maybe have 4×5 and 5×5 for more / less difficulty (probably more due to complexity)

    - Pretty Standard Scoring lines

    - Maybe some less standard ones as upgrades?



Extremely valuable. Even more so than Hand Size (very similar to Dynamic with Hands and Hand Size).

    - Player will have 'respins' and 'shoves' (bumps?) to modify payout
        - Respin will select a wheel to respin
        - Shove will move a wheel 'up' or 'down' one position (or more?) (Maybe tied to each wheel? Not Overall shoves)

    - The player will also be able to
        - Add entries to a wheel (symbol, mult, etc.)
        - * - Remove entries from a wheel (Symbol, mult, etc. down to 1) or even 0 would def. mess up the lines though.
        - Upgrade specific entry on a wheel (similar to Foil, Holo, Mult., Bonus, Poly, in Balatro) (Money Related : Cash, Silver, Gold, Emerald, Ruby, Saphire, Diamond, etc.) Prismatic).
        - Add 'Illegal' Gears .
            - Function very similarly to Jokers

    - Player will spin, wait for wheels to stop, then be able to 'respin', 'shove', 'use a consumable', etc. and ~~a~~ whenever 'Submit' is used, the score will calculate.
        - The main 'gear' will essentially allow this 'immediate scoring bypass'.
            - Could potentially remove this on higher difficulties?
            - Story: "Hacked into ~~Slot~~ slot machine to 'rob' casino"

* Array will always have three entries

['', 'S', '']

This way we can ensure that the symbol by itself can occupy any space on the wheel.

☆ Technical Note

- Execution order will be based on a FIFO queue. This way 'repeate' abilities can just add the symbol to the queue and it'll be run again.

Slot Machine Rogue-lite

- Implementation
  - There will need to be a 'reel' object that contains an array of 'Symbol' objects

☆ • Machine -> [ Array of Wheels ] , [ Array of Gears ] , Score_Needed , Current_Score [Scoring Lines array]

↳ Enemerators? essentially array of indices.
(0, 0, 0) = Top line
(0, 1, 2) = TL -> BR Diagonal
score adjusting as well? Some lines are easier than others

☆ • 'Reel' or 'Wheel'
  - [S1, S2, S3, ... SN]
    - Array of Symbols (original order needed?)
  - Machine_Index -> Int
    - Index of where reel is on machine
  - [S7, S8... S6]
    - Array of symbols for current spin arrangement
    - First three (or 'n') will be the 'visible' symbols

☆ • 'Symbol'
  - Type [ ] * Could be more than one type?
    - Enumerator for 'Cherry', 'BAR', 'Queen', etc.
  - Base Score -> Int
  - Base Mult. -> Int
  - Enhancement 1 -> Mult, Empowered, wild, etc.
  - " 2 -> Holo, Foil, Poly, etc.
  - Matches *(Built into 'Type' class now, Potentially OBE)
    - Array of Symbols that will match with current one?
  - Weight

* Mults. would need to access wheel's attributes. Or have a global file (would be easier to do save states this way - custom resource)

☆☆ Note: will need a 'State' machine for when player inputs work and 'respins' 'Shoves' 'items' 'submits' can be used.

Slot Machine Rogue-lite

- wheel implementation
- Spins (wheel.spin()) upper_bound ? int : 0 , lower_bound : int : len(array -1)
  - Select 'random' symbol in wheel to be 'top' of viewed symbols (could be weighted)

  - Rearrange array of current symbol arrangement to fit new pattern

ex.

Top / Bottom

[1, 2, 3, 4, 5] → [3, 4, 5, 1, 2]

original / current array

These are the 'visible' symbols on this reel.

rolled '2'

→ [2, 3, 4, 5, 1]

* Keeping copy of original array will speed up logic (no memory allocation etc.)
- just need original positions?

* Could just shuffle index pos of original array so we aren't moving whole 'symbol' objects information.

- Shove (wheel.shove(String: 'up', 'down'), int: 1 )

direction / Shift

  - * Based on parameter, shift all entries 'left' ('up') or 'right' ('down')

ex.

Shove('down')

[2, 3, 4, 5, 1] → [1, 2, 3, 4, 5]

len(5) pos 0 1 2 3 4
+1 +1 +1 +1 +1
shift

1 2 3 4 5 ← 0 → 0 1 2 3 4

- could do a mod(5) on these? → Then if it is negative, mult. by -1
- How would this work with -1 or something though

Need to look more into this with OOP.

Execution Queue (on Machine. wheels and Gears will have specific 'on_event' functions?)

A Before Round {
- Start with Pre-Spin Stuff
- During Spin *
- After Spin **
- Before Respin
  - During Spin *
  - After Spin **
- Before Shove
  - After Spin **

- During Scoring (counting / mult)

~~Post Scoring~~

  - wheel Symbols
  - Gear modifiers

- Post Scoring

} A After Round

Slot Machine Rogue-lite

Statistics

*Need to write program to ~~analyze~~ analyze payout lines percentage to hit with and without spins and Shoves!

- ODDs of Payout without modifications

$\begin{matrix} x & \cdot & \cdot \\ o & \cdot & \cdot \\ x & \cdot & \cdot \end{matrix}$ Potential lines [x, x, x, x, o]

100% chance

* Converging Payout lines are easier to get because 2nd reel is very easy to fulfill! (Maybe?)

Second reel needs to be $\begin{matrix} o \\ x \\ x \end{matrix}$ $\begin{matrix} x \\ o \\ x \end{matrix}$ or $\begin{matrix} x \\ x \\ o \end{matrix}$ = 3/5 or 60%

1/5 + 1/5 + 1/5          .6

Third reel needs to be $\begin{matrix} x \\ o \\ x \end{matrix}$ = 1/5 or 20%

1/5          .2

$3/5 * 1/5 = 3/25 = \boxed{12\%}$ Base Chance

(50% to Shove correctly)

- With one Shove?

Second reel needs with Shove

$\begin{matrix} o & x & x \\ x & o & x \\ x & x & o \end{matrix}$ or $\begin{matrix} o \\ x \\ x \\ x \\ x \end{matrix}$ or $\begin{matrix} x \\ x \\ x \\ x \\ o \end{matrix}$

1/5 1/5 1/5          1/5 • 1/2 = 1/10 = 10%          x 1/10          o 1/10

With Shove down / up

$= (2/10)*3 + 1/10 + 1/10$

$= 8/10 = 80\%$

third reel needs with shove $\begin{matrix} x \\ o \\ x \end{matrix}$ or $\begin{matrix} o \\ x \\ x \end{matrix}$ or $\begin{matrix} x \\ x \\ o \end{matrix}$ = 3/5 = 60%

1/5          1/5          1/5

(100% on Shove)

Have a base weight for rarity (60%, 30%, 10%) and then have weighted items
common ~~rare~~ uncommon rare

* will just have a weight attribute to symbols that can be modified

$8/10 * 3/5 = \boxed{48\%}$ With 2 shoves Available with one used on each reel

- Keep weights proportional? Not worth the effort I think.

~~Heavy~~ more weight = heavier symbol = more frequent

Symbol 1 = ~~5~~ weight

~~Sy~~ Symbol 2 = 1~~2~~ weight

} Just these two then add ⟶

Symbol 3 = 3~~2~~ weight

1 = 5/6 ≈ 83%

2 = 1/6 ≈ 16⅔%

1 = 5/9 ≈ 55%     3 = 3/9 = 33%

2 = 1/9 = 11%

normal → Stone → Steel → lead → concrete → mountain → ... → Black Hole

* weight will alter symbol appearance

Say we wanted symbol 1 to always be 83%?

$5/9 \times 6/6 = 30/54$          45/54 is what we need

18/54

★ * Gears will have unique animations while displayed (spinning)

Slot Machine Rogue-lite

* Maybe gears can be slotted into specific reels?

## Gear Ideas

- Sticky Gear (Rusty Gear?)
  - Temporarily sticks two adjacent reels together (Maybe not temporary, but changes so often?)
- Basic Gear (useful when expands to 3x4 and 3x5)
  - 3x3 lines are always active
- Slip Gear
  - lines can be made without 1 of the symbols needed
- Polished Gear (Clean Gear, Greased Gear?)
  - Increased max respins by 1 while held (Maybe more respins? Need to test)
- Step Gear
  - Shoves now can displace symbols by 2 (If chosen. Can still shove 1)
- Schrödingers Gear (Clearly Very Strong)
  - A 'Ghost' version of the first reel is spun and counts towards lines
- Rainbow Gear
  - Straight Line Payouts are 10x more (Scales with width of machine?) (Needs tested).
- Rubber Gear
  - Spins don't travel as far (Instead of 0-N, roll goes +3, -3 of last roll) [x-3, x+3]
  - Gives +1 max shove (would be very good with Step Gear)
- Geode Gear (May have 'mineral' symbols. Needs significant designing)
  - Mineral Symbols are triggered twice (maybe on bottom of lines?)
- Mis-shapen Gear (Potentially busted. Could be a tradeoff with it?)
  - Activates the 'unorthodox' lines (Maybe deactivate standard lines), (but the why use it?)
- <Name>
  - Something that 'auto-spins' first spin as downside, but great upside
- <Name>
  - Something that randomly 'Shoves' a wheel up or down as a downside

- <Name> (Extremely good. Would trigger other Gears)
  - A gear that gives 'x' freespins of the slot without the ability to alter them

Slot - Machine Rogue - like

- Consumables
  - Floppy-Disks
    - Cause upgrades to symbols on a specific wheel
      - Choose a symbol to upgrade
      - Can upgrade weight, score, mult., etc.
      - Similar to 'tarot' cards in Balatro

  - Chipsets (or board components)
    - Causes specific payout lines to improve
      - Similar to 'planet' cards in balatro
      - Could improve each symbol payout 'Step'.

        ex, would improve payout for two match, three, four, and five
        oo xxx ooo xx oooo x ooooo
        on this specific line.

☆ * Need to run a 'simulation' of spins with each payout line to see which are easier and should have higher score.

  - Maybe have partial payouts like real slots on partial lines

Slot Machine Rogue-lite

- Machine
  - Wheels
    - Symbols
      - Types
  - gears

* Are these all 'resorces'?

* Definetely all classes, but resorces would help the 'saving/loading' process

- It ~~[illegible]~~ would be useful to have the ability to affect all of a resorce.

- Type ★ Need to add a sprite for the current type
  - Contains enemurater to denote which type it is

    ex. 'Cherry', 'bell', 'BAR', etc)
  - contains enemerater for original type.'
  - Functions
    - _set_type(type: Enum) Null
      - Sets the current type to the passed in Emum
    - _add_type(type: Enum~~s~~[]) Null * multiple types allowed
      - adds the passed in types to the 'type' array
    - _remove_type(type: Enum[]) Null * multiple types allowed
      - removes the passed in type(s) from the 'type' array
    - _is_type(type: Enum) Boolean
      - returns 'true' or 'false' ~~[illegible]~~ depending on if the passed in type is in the current 'type' array

- Symbol Functions (Attributes on an earlier page) • Constructor so we can make copies easily.

Same for Mult, Weight underlined is what would change

- ~~update_score~~ _set_score(score: int) • Sets score Attribute (could be setter/getter)
- _add_to_score(additive: int) • Adds to symbol score
- _remove_from_score(sub: int) • Removes from symbol score
- _get_score() • Returns symbols 'score'

Index of the enhancement as well

- _set_enhancement(enhancement: Enhancement) • Sets symbols enhancement
- _calculate_score() • Goes through steps to calculate score
- _destroy() • Goes through steps when destroyed

Slot Machine Rogue-lite

- Components
  - Type
    - Script with all exported variables (maybe?)
    - Sprite 2D
      - Image of symbol (compressed texture 2D)
    - ~~Area 2D~~
      - ~~Area for detecting mouse~~
  - Symbol
    - Script with methods and exported variables (maybe?)
    - Sprite 2D
      - Image of Background of symbol (white, stone, etc.)
      - Easily shaderable
      - Shader Attached?
    - Area 2D
      - Area of symbol to detect mouse/touch
      - Need to investigate controller support
    - Type (Defined in script?) X
  - Wheel
    - Script with methods/variables
    - Sprite 2D
      - Sprite for wheel (need to figure out wheel animation, etc.)