

# Final Goal: 1

- Victory condition 1
  - Win: leave the dungeon alive
    - You can leave when there are no ghost
    - You are forced to leave after obtaining the 3<sup>rd</sup> rune
  - Lose: has no treasure to lure away the ghost
  - Reward: collect treasures to earn score
    - Final score = treasures collected
    - Rune: 100, Gem: 10, Coin: 1, Skull: 0
  - You can 'win' almost anytime you like

# Final Goal: 2

- Victory condition 2
  - Win: collect 3 runes
    - You are forced to leave the dungeon after obtaining the 3<sup>rd</sup> rune
  - Lose: same as above
  - Reward: use as few turns as possible
    - Final score = game turns
  - Harder, both for the player and the designer

# Final Goal: 3

- Restrictions
  - You cannot stay in the dungeon for too long
  - You cannot carry too much treasure
- Choices
  - Should I pick up the treasure?
  - Which treasure should I drop?

# Final Goal: 4

- Rule: rune  $\leftarrow$  altar  $\leftarrow$  treasures
  - Runes are produced from the altar
  - Altars always appear in the fixed order: death, trickery, greed
  - Each altar requires different treasures: gem (rare), gold coin (common), alluring skull (abundant)
  - Death: 1 gem, 2 coin, 3 skull
  - Trickery: 2 gem, 2 coin, 2 skull
  - Greed: 3 gem, 2 coin, 1 skull

# How to Design: Action

- Design actions in a game loop
- Description: What can the player do?
  - Available keyboard or gamepad inputs
- Restriction: When can the player do a specific action?
- Costs and benefits: Why to do this?
  - Short-term, clear to the player, definitely happens
  - Long-term, not fully shown to the player, might happen

# Action List

- Move
  - Arrow keys, Vi keys
  - Joystick
- Pick up
  - Space
  - A
- Drop skull, coin, gem
  - s, c, g
  - B + A, X, Y
- Confirm or cancel
  - Space or Esc
  - A or B
- ? Leave the dungeon:
  - <
  - Y
- ? Examine:
  - x
  - X

# Action: Move: 1

- Description: Move 1 step in one of the 4 directions
- Restrictions: 3 invalid movements
  - Cannot bump into walls
  - Cannot move when the ghost is in sight
  - When bumping into the altar, the player will be asked to make sacrifice

# Action: Move: 2

- Cost 1: [move]  $\leftarrow$  turn
  - A valid movement takes 1 to X turns, which is related to the treasure amount
- Cost 2: turn  $\rightarrow$  alarm level  $\rightarrow$  ghost
  - The alarm level raises as turn passes, when it is high enough, a ghost will appear



# Action: Move: 3

- Benefit 1: [move] → position in sight, unexplored area → treasure
  - You can only pick up treasures when standing on it
  - Treasures only appear in unexplored areas
- Benefit 2: [move] → wall → treasure generation
  - If you are adjacent to the wall when the ghost appears, there is a chance to generate 1 more gem.

# Action: Pick Up: 1

- Description: Pick up the treasure from the ground and put it into your bag
- Restriction:
  - Can only pick up treasures under your feet
  - Cannot pick up when a ghost can see you
  - Cannot pick up when you are carrying 9 treasures in the bag

# Action: Pick Up: 2

- Cost 1: [pick up]  $\leftarrow$  turn
  - A valid picking up takes 1 turn
- Cost 2: [pick up]  $\rightarrow$  treasure amount  $\rightarrow$  speed
  - You are slowed down
- Benefit 1: [pick up]  $\rightarrow$  bag  $\rightarrow$  score, sacrifice, lure
  - Only treasures in the bag will be counted into the score
  - Only treasures in the bag can be sacrificed
  - Only treasures in the bag can be used to lure away ghost

# Action: Take Out: 1

- Description:
  - Drop: Leave 1 treasure on the ground
  - Sacrifice: Remove 6 treasures from your bag in exchange for a rune
  - Lure: Remove 1 to X treasures from your bag to 'kill' the ghost
  - Drop and lure share the same input key
  - Sacrifice is triggered by bumping into the altar
- Restriction:
  - Can drop 1 treasure on an empty floor

# Action: Take Out: 2

- Cost 1: [take out]  $\leftarrow$  turn
  - A valid taking out costs 1 turn
- Cost 2: [take out]  $\rightarrow$  [move]  $\rightarrow$  treasure
- You need to replenish treasures for the next sacrifice, luring or more scores
- Cost 3: [take out]  $\rightarrow$  move speed  $\rightarrow$  treasure generation
  - You have lower chance to get 1 more gem

# Action: Take Out: 3

- Benefit 1: [take out] → treasure amount → speed
  - You might speed up
- Benefit 2: [sacrifice] → rune → score
  - You gain 1 rune and raise the score
- Benefit 3: [lure] → turn
  - By 'killing' the ghost, you earn the right to act next turn

# How to Design: Resource

- Design resources used by actions
- Description: name, data type, data range
- Flow: input → resource → output
- Feedback: Is there a positive or negative feedback loop?
- Restriction: When does the flow happen?
- Costs and benefits: visible to the player
- Designer's explanation: Why set these rules?

# Resource List

- Alarm Level
- Visual Range
- Turn
- Speed
  - Move
  - Pick up
  - Take out
- Treasure
  - Gem, coin, skull, rune
- Treasure Generation
- Position
- Unexplored Area
- Ghost
- Altar
- Score
- Encounter mode
  - Explore, lure



# Resource: Alarm Level: 1

- Description:
  - Invisible to the player, but will inform the player when the ghost is about to appear
  - {current: integer, max: integer, has-ghost: current >= max ? true : false}
- Output: change the encounter mode from explore to lure
  - Explore: go to unexplored area, collect treasures
  - Lure: kill the ghost in sight

# Resource: Alarm Level: 2

- Flow: ([action] → turn | [lure]) → alarm level → encounter mode → ghost
- Restriction: the current alarm level is changed by actions in specific encounter modes
  - Increase: explore, [move, pick up, drop, sacrifice] → turn
  - Increase: lure, [skull]
  - Decrease: lure, [gem]
  - Otherwise, the current alarm level remains unchanged.

# Resource: Alarm Level: 3

- Max alarm level: 50, Visual range: 5
- The current alarm level is mostly composed of turns from movement, which is related to the map size.
- The map size is roughly  $52 * 12$ .
- If walking along the middle line ( $y = 6$ ), it takes 40 turns to explore the whole map.
- However, considering the start position, walls and picking up treasures, we assume that one can barely discover every corner in 50 turns.
- Let the ghost appear early to challenge the player.

# Resource: Alarm Level: 4

- Current alarm level:
  - Start from 0 in explore mode
  - Reset to 0 after entering lure mode
- How to change:
  - +X turns  $\rightarrow$  +X levels
  - Increase or decrease X levels directly
  - The current level can be lower than 0
- Actions:
  - +1 turn: pick up, drop, sacrifice

# Resource: Alarm Level: 5

- +1 to 3 turns: move
  - Related to how many treasures you carry
- +40% max level, +20: skull
  - 40% is just an assumption, to make things worse, but not deadly
- -40% max level, -20: gem
  - Use symmetry design, the same value as skull, since there is no apparent reason not to do so
  - Gem is better than coin.

# Resource: Turn

- Description: invisible to the player
- Flow: turn → ([action] | alarm clock)
  - The turn generates itself automatically
- Action turns:
  - Most actions cost 1 turn, to make calculation easier for the player
  - The player's move speed is 1 to 3 turn, which is based on the treasure amount.

# Resource: Move Speed: 1

- Description: visible to the player, {1 | 2 | 3}
- Flow: ((Treasure amount → move speed), turn) → move
- Feedback: Treasures in bag+ →
  - Score+, survival chance+
  - Move speed- →
    - Treasure generation+ → treasures in bag+
    - Lure mode+ → treasures in bag-

# Resource: Move Speed: 2

- Move speed: treasure amount
  - 1: 0 – 3
  - 2: 4 – 6
  - 3: 7 – 9
- When carrying 2 runes and 1 treasure, the PC can still move fast enough.
- The PC can carry everything required for the 1<sup>st</sup> rune (6 treasures) without slowing down too much.
- With 2 runes and 6 treasures for the 3<sup>rd</sup> rune, the PC can carry 1 more spare treasure.



# Resource: Treasure: 1

- Description: both the name and amount are visible to the player, {amount: integer, alarm: integer, damage: integer}
- Flow: gem, coin, skull
  - Treasure on the ground → [pick up] → treasure in the bag →
    - [drop] → treasure on the ground
    - [lure] → ghost → turn
    - [sacrifice] → altar → rune
    - [leave] → score

# Resource: Treasure: 2

- Treasure on the ground
  - Gem: rare, coin: common, skull: abundant
- When and where to generate treasure
  - After the map is created, any empty floor
  - After entering the lure mode, empty floor inside the mist
- Alarm level
  - Gem: -40%, coin: 0, skull: +40%

# Resource: Treasure: 3

- Exchange for rune at the altar
  - Death: 1 gem, 2 coin, 3 skull
  - Trickery: 2 gem, 2 coin, 2 skull
  - Greed: 3 gem, 2 coin, 1 skull
  - Require more gems to increase the difficulty
  - Encourage the player to collect skulls near the altar or use them on the way

# Resource: Treasure: 4

- Damage
  - Gem: 2, coin: 1, skull: 2
  - The ghost has 2 HP and is dead with 0 HP.
  - Gem is the best option, but it is rare.
  - Coin does not raise the alarm level, but you must have 2 of them at hand.
- Runes cannot be dropped or used against the ghost. They are the permanent burden.

# Resource: Bonus Treasure

## Generation: 1

- Description:
  - There is a chance to generate 1 more gem in the unexplored area.
  - The chance itself is invisible, but the player will be informed of the result.
- Flow: (move speed, position) → bonus generation → gem
- The bonus has 3 grades: 20%, 40%, 60%
- The bonus will be calculated once when entering the lure mode. The grade can be leveled up by 3 factors.

# Resource: Bonus Treasure

## Generation: 2

- Move speed: 2 or 3
- Position: adjacent to 1 walls
  - Surrounded by more walls does not raise the grade further, because you can hardly find a corner.
- The move speed and position are exclusive.
  - If you move slowly, you cannot reach the wall.
  - If you stick to the wall, you need more turns to pick up treasures in the open area.

# Resource: Treasure

## Generation: 1

- Initial dungeon
  - 0 gem,  $3 + 1d5$  coin, 18 skull
  - Gem is only available from unexplored area
  - Coin is the main reason for exploration. There is a chance that the PC can get enough coins for all 3 runes.
  - Make sure there are more than enough skulls along the way.
- Unexplored area
  - $\text{Max}(1, 1d3 - 1)$  gem,  $1 + 1d3$  coin,  $3 + 1d5$  skull

# Resource: Treasure

## Generation: 2

- Bonus gem is calculated separately
- Usually the PC need 2 unexplored areas to collect enough gems. The worst case is 3 unexplored ones.
- There are always enough coins for the current rune. There is a chance to obtain spare coins.



# Resource: Altar & Unexplored Area

- The altar appears on an empty floor outside PC's FOV (field of view). It is always visible on the map, which is marked as 'A'.
- The altar's visual range is 5, the same as PC. Any floor it can see is changed into unexplored area.
- Previous treasure inside the unexplored area will disappear and new ones will be generated. The altar, if it happens to be inside this area, is unaffected.
- The altar will disappear after sacrifice. There can be only 1 altar at a time.