Use Case: Main Menu

Actor:
- Player

Goal:
- Access various game features, settings, and initiate gameplay

Preconditions:
- Player has launched the game

Scenario:
- Player launches the game and the main menu is loaded
- Players navigate through the menu options using keyboard input
- Players can return to the main menu at any point in time from other screens by using the esc key

Exceptions:
- If the player selects exit from the main menu, the game terminates
- Leaderboards may not be accessible until game as been played at least once

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Use Case: Start Game

Actor:
- Player

Goal:
- Initiate and play Maze Runner, navigate through post-apocalyptic streets, collecting essential supplies, and reaching safety while avoiding enemies and obstacles.

Preconditions:
- Player has launched the game, the main menu is accessible.

Scenario:
- Player launches the game.
- The main menu screen is displayed, offering various options including "Start Game."
  - Start Game: Player will be loaded into the first level
  - Leaderboard: Previous high scores will be shown to the player.
  - Settings: The settings menu will be shown allowing users to adjust volume and base difficulty.
- The story of the game is displayed to the user
- The game generates the game layout with pre-defined barriers, map layout, and regular rewards. The number of rewards and enemies will be dependent on the levels cleared thus far.

- Player's character spawns at the designated starting point with 3 lives and zero collected rewards. The game timer starts, tracking the time elapsed in the level.
  - Player views the game interface, displaying lives (hearts), points earned, game timer, and a list of rewards remaining to be collected.

- Moving enemies (e.g., Raiders, Scavengers) and non-moving enemies (e.g., punishment blocks) are distributed across the map.

- Player controls their character using keyboard or controller input. (WASD or Arrow Keys)
  - Player navigates through the post-apocalyptic streets, avoiding enemies and collecting regular rewards (food, supplies, shelter), aiming to reach the endpoint.
  - Player may encounter bonus rewards (e.g., extra life, vehicle power-up, weapon power-up, extra game points) during gameplay.
- If the player loses a life due to enemy encounters or other hazards, they respawn at the starting point with reduced lives, rewards collected do not reset.

- If the player collects all regular rewards and reaches the endpoint without losing all three lives, they successfully complete the level.
  - The game calculates the player's score based on a combination of completion time, punishments, and bonus rewards.
- If the player loses all three lives, the game displays a "Game Over" screen, and the level is considered a failure.
  - Player can choose to start a new game from the beginning by selecting "Play Game" from the main menu.

Exceptions:
- If the player quits the game or selects "Exit" from the main menu, the game terminates.
- Starting a new game is not possible while in the middle of a level; the current level must be completed or failed first.

Priority:
- Essential for initiating and progressing through the game.

Use Case: Moving Character

Actor:
- Player

Goal:
- Player can move the main character around the maze. The player can move at most one cell at each "tick" of the game. The main character will not move if the player doesn't press a valid key, or if the move is not valid.

Preconditions:
- The player is actively playing a level within the game and loaded onto the maze

Scenario:
- The main character's initial position is the starting point in the maze
- Player uses keyboard input to control the main character's movement
  - The main character up, down, left, and right by pressing W, S, A, and D on the keyboard
- The player needs to move their character around the maze to collect the rewards
  - Player collects rewards by moving to a cell with them, the reward is then removed from the map

Exceptions:
- The character cannot move to a cell that has a barrier present
  - Player must move in a different direction
- Player can move character at most one cell for each "tick" of the game
- The player needs to move to avoid enemies and punishments
  - If the player loses a life, the character's position is reset to the spawn spot and player must move the character from the beginning
- The player cannot complete the level by moving to the last cell of the maze without collecting all the regular rewards

Priority:
- Essential, must be implemented for player interaction and progression within the game

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Use Case: Spawn Enemies
Actor:
- Animate: Scavengers, Raiders, Military
- Inanimate: Landmine (Points deducted if player steps on it)

Goal in Context:
- Generate and distribute enemies, bonus rewards, around the map that the player must avoid

Preconditions:
- The game has been started by the player

Scenario:
- Game renders the predetermined map layout and places animate enemies are randomly determined locations across the map

- - The higher the level, the more animate enemies will spawn which will ensure appropriate challenge for the player
- Spawn locations may not overlap with rewards and have a minimum distance from the player at the start of the game to maintain balanced gameplay
- Enemy behaviors, such as movement patterns and aggression levels, are defined according to the enemy type and level design
- Moving enemies, once spawned, begin actively pursuing the player's character, trying to close the distance and engage in interactions

Exceptions
- The game ensures that enemy placements do not violate the predefined level design, avoiding overlaps with barriers, rewards, and other critical game elements
- The number and types of enemies spawned may vary based on the level's difficulty, ensuring appropriate challenge

Priority
- Essential for creating engaging gameplay experiences and challenges within the game

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Use Case: Powerups

Actor:
- Player

Goal:
- The Player can collect power-ups that grant advantages in the game such as an extra life, enhanced abilities, and so on.

Preconditions:
- The player is actively playing a level within the game.

Scenario:
- Various power-ups (e.g., extra life, enhanced abilities, etc.) are scattered around the map.
- The player's character can collect power-up items by moving their character onto the locations containing the power-up.
- Upon collecting a power-up, its respective benefit is applied to the main character:
  - **Extra Life**: An additional life is added to the player's total lives.
  - **Vehicle Power-up**: The player gains protection from one enemy collision and enjoys increased movement speed for a limited duration.
  - **Weapon Power-up**: The player can defeat enemies instead of just avoiding them for a limited duration.

- ○ **Extra game points**: A predetermined number of points are added to the player's score.
- After the benefit duration expires, the main character returns to their normal state.

Exceptions:
- If the player has the maximum number of lives, collecting an extra life power-up will not surpass the maximum limit.
- Power-up effects are not stackable; collecting another power-up before the current one expires will replace the old effect.

Priority:
- High - enhances gameplay by providing the player with strategic choices.

Use Case: Enemies Interactions

Actor:
- Player

Goals:
- The player experiences interactions with various types of enemies within the game, including animate enemies and non-animate enemies (punishment blocks)

Preconditions:
- The game has been started by the player and enemies are present within the level

Scenario:
- Animate enemies are actively pursuing the player's character based on a predefined sequence of behaviours and movement patterns
- If the player's character collides with an animate enemy, this is considered an interaction resulting in one of the following results:
  - Loss of Life: If the player loses a life due to an enemy interaction, their character's position is reset to the spawn point, but collected rewards remain.
  - Penalties: Certain moving enemies may impose penalties on the player, such as reducing the player's score or impairing their character's abilities temporarily.
  - Enemy Defeat: If the player has collected a weapon power-up, they can use it to defeat moving enemies instead of just outrunning them. Defeating an enemy removes them from the level.
- Non-animate enemies (punishment blocks) may also interact with the player's character if the character moves onto a cell containing a punishment block.
  - May result in reversal of player controls and point deductions

Exception:

- The consequences of enemy interactions may vary based on the enemy type and predefined game rules.

Priority:

Essential for creating challenges and obstacles within the game, requiring players to develop strategies and decision-making skills.

Use Case: Defeat

Actor:
- Player

Goals:
- Player experiences defeated and all lives have been lost, resulting in the termination of the current level and game session

Preconditions:
- Player is actively playing a level

Scenario:
- During gameplay, the player's character life count has been depleted to zero
- Upon defeat, the game displays a defeat screen, providing feedback to the player about their performance and outcomes such as levels cleared, rewards collected, points earned, and time played
- The player's name is collected to record their performance for leaderboard entries
- The player is prompted to either restart the game from the first level or return to the main menu to make different decisions or adjust settings for future gameplay

Priority:
- Defeat provides consequences for the player's actions and challenges them to improve their strategies and skills

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Use Case: Clear a Level

Actor:
- Player

Goals:
- Player finishes a level with predetermined challenges and difficulties, and can continue to the next level.

Preconditions:
- Player has to finish the level, and actively play the game.

Scenario:
- Player actively plays the game, and maintains to stay alive and not lose all their lives. Then, when some certain challenges are done, the level would get finished.

Priority:
- High - makes the player to be able to continue the game, and choose another level.

Use Case: View Leaderboards

Actor:
- Player

Goal:
- Check the top scores and achievements of previous gameplay sessions.

Precondition:
- The game has been played at least once.

Scenario:
- From the main menu, the player selects the 'Leaderboard' option.
- The screen displays a list of top scores, player names, and possibly the level reached, from the previous rounds.
- The player can scroll through to see more scores or return to the main menu.

Exception:
- Leaderboards may only become populated with records once players have completed levels and earned scores.

Priority:
- Medium - adds a competitive element to the game. Provides players with a sense of competition, motivation, and the opportunity to track their progress and achievements.

Use Case: View Settings
Actor:
- Player

Goal:

- Assess the settings menu to configure game settings such as volume levels and initial difficulty within the game

Preconditions:
- The player is at the main menu screen of Maze Runner

Scenario:
- Player selects "Settings" option from the main menu
- Game displays a settings menu allowing the player to customize the following aspects of the game:
    - Volume of in-game audio and music
    - Initial difficulty of the game such as enemy behaviour, enemy speed, and number of enemies
- Selected settings are applied to the gameplay experience and are saved for future gameplay sessions
- Players can return to the main menu from the settings menu

Priority:
- Allow players to customize their gameplay experience