**Game Design Document**

Game Title: Reverse Frogger  
Game platform: PC, Android  
Target Age: 1 - 12  
Rating:

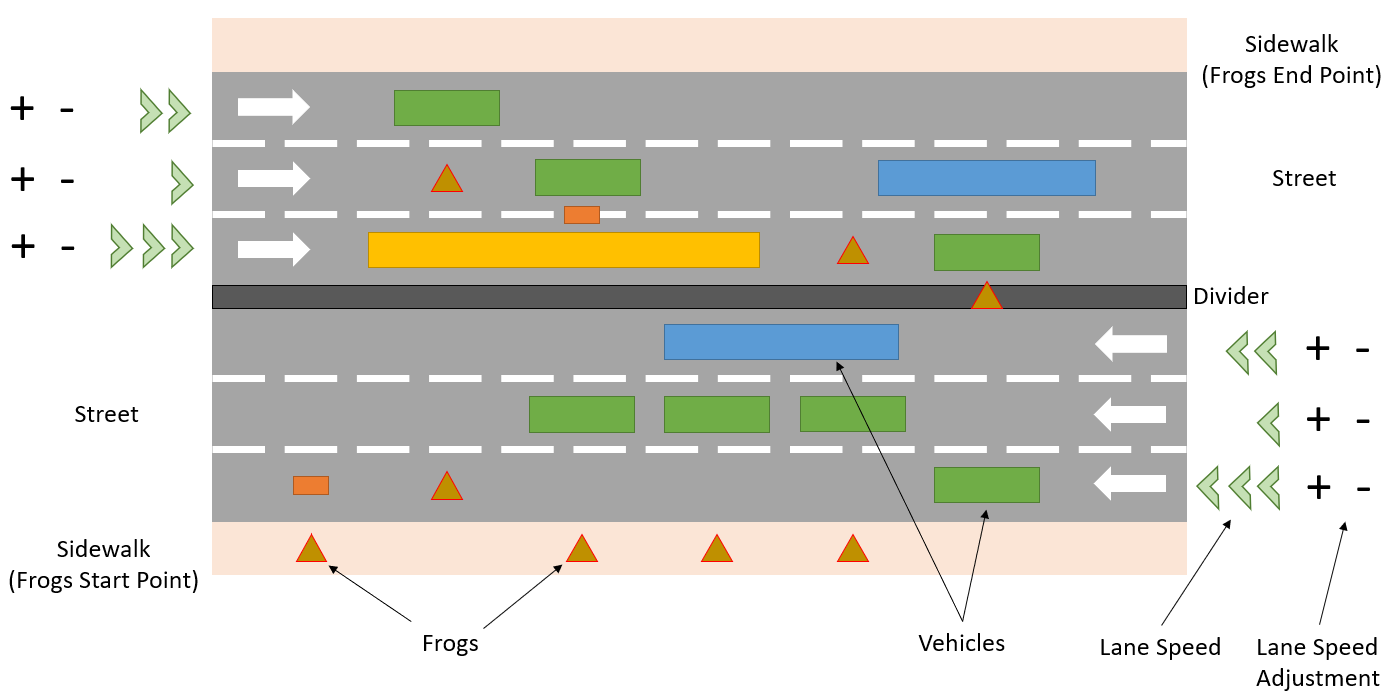
Game Summary: Direct flow of traffic to prevent any frogs from crossing the road! Then reverse the roles, and lead the frogs to victory.

Game Outline: Frogs are trying to cross the road again and this time, they come better prepared than before. They have trained and upgraded themselves in different combat and defense capabilities, and are employing advanced strategies to cross the road tactically. We do not want to induce panic among the humans so we have to deal with the frogs naturally, and that is using the morning rush-hour traffic on the road. By influencing the flow of traffic, we will put a stop to the frogs’ advances! We as humans must not let them cross it, or else…

Unique Selling Points:  
- A twist on the classic Frogger game  
- Plan the moves to stop the frog army advances by directing traffic, calling in vehicles, speeding up / slowing down lanes   
- Flip the switch, become the frog leader and overcome the human’s plan (your own plan!)  
- Play a variety of game modes: puzzle mode, endless mode, PvP  
- Play it turn-based, or in real-time

Similar Competitive Products: Frogger

**Map**



Map is broken into a 11x9 grid (basic). The frogs will only spawn in the middle 7 grids from the south sidewalk, with 2 additional grids on left and right for a buffer, showing new vehicles entering the playable area.

Game grid can be extended as required, more lanes (vertically) or more horizontal coverage.

**UI**:

Turn number, HP bar, wave number, remaining enemies

Lane adjustment controls ( + / - )  
Lane speed green arrows showing current speed

Skill gauge - using circles/orbs to indicate skill points  
Skills bar - buttons for skill - 6 skills

Finish turn button

When selecting a frog, or a vehicle, a pop up UI shows additional details of that frog/vehicle.   
Each skill will have its own UI interaction supporting it. Frogs/vehicles will be highlighted if the skill can be executed on it.   
Have additional UI to indicate “skill about to happen next”

**Enemy Types** (V itw: Vehicle in the way)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Name** | **Movement Pattern** | **Additional** | **Interval** | **Resist** | **HP** | **DMG** |
| Soldier  (Green O) | Forward 1 step | V itw: remain on spot, and skip 1 turn (concussed) | 1 turn | - | 1 | 1 |
| Brute  (Dark Red O) | Forward 1 step | V itw: knock the car forward if there is another lane and step forward. If the next lane is a divider/sidewalk, hold position. | 1 turn | Motorbike  If hit by (-1 HP): stop veh in track and disable veh 1t | 2 | 4 |
| Skater  (Yellow O) | Diagonal left then diagonal right then repeat | V itw: move to horizontal displacement but no vertical displacement | 1 turn | - | 1 | 1 |
| Sprinter  (Red O) | Forward 2 step | V itw: remain on spot, and skip 2 turn  (concussed) | 1 turn | - | 1 | 1 |
| Charger  (Orange O) | Forward continually until it hits a veh or half the map | Winds up for the charge over 3 turns.  V itw: stop at spot before, and skip 1 turn (concussed) | 3 turns | - | 1 | 1 |
| Jumper  (Purple O) | Forward 1 step | V itw: jumps on top of the veh in front. Will ride the veh while on top. | 1 turn | - | 1 | 1 |
| Vaulter  (Light Purple O with stick) | Forward 1 step | Holds a vault pole that extends 1 lane behind. If any veh hits the vault pole, it will stun the vaulter (skip 1 turn) and disable him, turning him into a “grunt”.  V itw: vaults over to the next lane after. | 1 turn | - | 1 | 1 |
| Baby  Foresight  (Grey O) | Forward/Left/Right 1 step | V itw: move behind the vehicle path if no V itw, else stay.  If no V itw but veh on left/right, stay. | 1 turn | - | 1 | 1 |
| Shield (L/R)  (Green O with shield) | Forward 1 step | V itw: remain on spot, and skip 1 turn (concussed) | 1 turn | All vehicles approaching from the shield side will be stopped in its tracks (even while concussed), until the frog leaves. | 1 | 2 |
| Bloat  (Black O) | Forward 1 step | V itw: remain on spot, and skip 1 turn (concussed) | 1 turn | When killed, explode bile onto colliding veh, stopping veh and remain for 1/2 turn | 1 | 2 |
| Flatten  (Rectangle) | Forward 1 step | V itw: flattens body and moves under. Un-flatten if possible. | 1 turn | While flatten, resist all veh except motorbike | 1 | 1 |

**Vehicle Types** (all veh will follow lane direction, speed is capped by max(max spd, lane spd))

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Movement | Additional | Size | Max Spd |
| Car | - | Manual lane change possible | 1L | 3 |
| Speedy Car | - | Manual lane change possible | 1L | 4 |
| Truck | - | Manual lane change possible | 2L | 2 |
| Bus | - | Manual lane change possible | 3L | 1 |
| Motorbike | - | Ride in the middle of lane, but if there is a veh in front (either disabled or moving slower), it will shift to ride in between lanes and continue its progress.  Manual lane change possible | 1L | 3 |
| Race Car (Reckless) | Lane speed + 2spd | Auto lane change and continue progress. If unable to lane change, stop progress  No manual lane change | 1L | 5 |
| Garbage Truck | - | Emits smelly air 1 grid behind it, stuns all enemies that are in smelly air.  Manual lane change possible | 2L | 1 |
| Road Sweeper | - | Only on lanes adjacent to sidewalk / divider.  No manual lane change | 1L | 1 |

Note:  
Motorbikes will shift in-between lanes if vehicle is in its path. It will shift up in-between, from bottom to up, until the topmost lane, where it will shift down instead.

**Player Control**

Lane Speed Control  
Every lane has a speed adjustment control with 1, 2, 3 speed. Every turn, it can be increased or decreased by 1 speed point. All lanes can be adjusted in speed simultaneously in the same turn. Vehicles will react to the new speed immediately on the turn it is applied.  
(i.e. Speed adjustment is applied to the lane, then the vehicles move based on the new speed)

Player Skills  
Skill Gauge:   
Contains skill points earned over the course of the game that can be spent on skills.   
- After every turn, the player will gain 1 skill point.  
- After each frog kill, the player will gain 1 skill point.

Skills:  
1. Assassinate (8 pts): immediately snipes the frog (exceptions: brute (-1 HP), cannot hit frogs on top of vehicles, or is “flattened”)  
2. Call-in Vehicle (3pts): calls in a chosen vehicle that arrives at the start of a lane on the following turn  
3. Air-drop Vehicle (10 pts): air drops a chosen vehicle right onto an empty grid on the lanes  
4. Manual Lane Change (2pts): perform a manual lane change to a vehicle (if possible)  
5. Disable Unit (3pts): stun a unit for a turn  
6. Boost Unit (3pts): give the unit an extra turn

**Environment**

Night-time  
Limited vision on road. Only light sources are sidewalk lamps (full vision on sidewalks), and headlights from vehicles (light up 2 grids away). No light on the divider. No light on top of vehicles.

**Sound Effects / Music**

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#### **Reverse Frogger Schedule**

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| --- | --- | --- | --- |
| **Milestones** | **Actions to take** | **Timeline for each action** | **Outcomes** |
| Design the Map (asset-less) | - simple grid like map using basic colours for textures | 29/8 | Simple map |
| Afew enemies and vehicles, moving on the map grid, rotating turn by turn (2 game states). Random spawn for vehicles and enemies. | - create classes for enemies and vehicles  - create command classes  - create finite state machine and work in-sync with commands | 1/9 | Working unit class.  Working command class.  Working grid system  Working state machine. |
| Manual Turn by Turn | – Turn based setup: add a button to advance the game when clicked (will convert to ‘End Turn’)  - Simulate without any player action |  |  |
| Design vehicles and its movement, with preset lane modifiers | - Add speed modifiers on lanes  - move vehicle on turns, ignoring collision with enemies |  |  |
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**To-do**

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| --- | --- |
| **Description** | **Done** |
| Call-in vehicle and air drop vehicle  Setup:   * Have another new class to handle spawning in the staging vehicles. Spawn one of each and hold in a list. * Create a new object and that new object only instantiates the class. All other classes that require the staging vehicle will have to search for that game object and add the class instance into itself. * Clicking button opens a UI to select the car * Set selected\_skill to call-in/air-drop * The UI should be a full panel that is non-clickthrough, with the 3x2 buttons on it, and it has a X button at top-right. * User can exit the UI by clicking X button, clicking outside the panel, clicking the call-in / air-drop button again. Exiting UI will drop skill from selected\_skill. * When the car button is clicked, grab the unit referenced from the spawning class and create the Skill. Save the skill in tmp holder. * The usercontrol will now be in location selector state. This will generate red boxes or green boxes when moused-over spots to drop the vehicle. Red boxes will indicate unable to drop and when clicked, will not have any reaction. Green boxes are ok to drop and when clicked, it will translate the click pos to gridcoords and add to the skill. This will then trigger the skill button highlight and save to the dictionary. * Note: call-in vehicle should always be ok for any lane. It will replace the vehicle in that spot if the vehicle has not moved into view. I.e. called-in immediately. If not, it will follow directly behind vehicles like truck/bus. * Note: air-drop vehicle have to check for its entire length whether dropping in is possible. I.e. vehicle not in the way, brute not in the way, but others is ok. Dropping in will kill the other mobs. * Enable exiting this state by Right Click (or also by clicking outside play area). * Executing the action will need the vehicle spawning class to handle. The class will shift the unit to the targeted location, rotate as necessary, and set the move direction. |  |
| Skill Orbs   * Generation and display. Display yellow squares based on grid, to a max of 10. * Each turn generates 1 orb. Each kill generates 1 orb. |  |
| Skill Buttons   * The buttons will become disabled if there is insufficient orb available. It will turn grey and be unclickable. * ~~Any change in the orb number~~ On begin of player’s turn, trigger a re-check on the buttons. * When a skill is selected, reduce orb by making them grey. Do not trigger re-check. * When a skill is highlighted, keep the grey orbs and trigger a re-check on the buttons for other skills. * When cancelling a skill, turn the grey orbs to yellow and trigger re-check. * Don’t disable a button due to lack of skill orbs if it has been highlighted. |  |
| Health Orbs   * Start with 10 health. Each enemy that reaches the end reduces health based on damage |  |
| Add a game log box to keep track of logged interactions in the game, used for dev now and will be refined for player in future.  Player can see their past actions, and receive feedback on their actions. |  |

**Bugs**

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| --- | --- | --- | --- |
| **Description** | **Priority** | **Scheduled** | **Done** |
| Lane Change selection allows to select a truck/bus on its tail grids. It should direct the selection to the head of vehicle. |  |  |  |
| Lane Change checking of feasibility does not account for multiple grid vehicle, such as truck and buses. |  |  |  |
| Lane Change for vehicles does not account for motorcycle in the way, when motorcycle is in-between lanes. |  |  |  |
| Lane Change should not be allowed when vehicle is stunned |  |  |  |
| Lane Change – clicking lane change button again to deselect it did not remove lane change UI |  |  |  |
| Lane Change – vehicle can still lane change into brute’s location. Why? |  |  |  |
| Enemy Spawn should trigger grid repositioning too |  |  |  |
| Enemies are still advancing out of bounds and not being deleted or halted |  |  |  |
| Motorbike when in-between lanes, moves back into the lane, instead of remaining in-between lane while another vehicle is in its place |  |  |  |
| Motorbike changing lane – issue when the motorbike that is in-between lane is the one that is disabled while the one in the middle wants to change lane. |  |  |  |
| Lane Change - Selecting motorbike in-between lane will not centre the UI on it, it centres onto the grid instead. |  |  |  |
| Skater vehicle in the way issue – when vehicle is diagonally, it will hit and displace horizontally instead, but there might be a vehicle horizontally. How to resolve?   * Make the skater stay in-between lane. And continue its motion forward. It will stay stunned in-between lane, can only be killed by motorbike. |  |  |  |
| Jumper interaction and vaulter interaction with motorbikes, if it is on top of the motorbike and it shifts in-between lanes. Might need to stick the object to the top of vehicle. |  |  |  |
| Positioning of enemies in a grid – there should be priority system for the positioning as brute and shield will block vehicles and should be against the direction of traffic. With shield as priority, followed by brute. Shield will defend brute from taking damage. |  |  |  |
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