Froggers Operation:

Froggers game has a rather simple rule: You control the frog to help it cross the sidewalk by not crushed by cars and that's it.

For starting the game, you should power on and use programming file to run the game. After previous operations, you should see the always-on bottom and top green lanes, representing the starting point and finish line. You should turn up switch 9 for a game starting option of speed.

Then you use switch 7-0 to choose a speed of the crossing car (7 is the slowest refresh rate while 0 is the fastest). Then you turn down switch 9 to confirm. **Only turn up one speed option since it was designed to be so.**

After that, you should be able to move the frog and start the game. **Remember not to change the speed when game started without turning up switch 9 or some unexpected behavior might come up.**

*however, unexpected behavior could be good, I'll explain it later.

1. Playing the game
   Key 3 moves left, key 2 moves right, key 1 moves Up and key 0 moves back.

   If the frog collides with any of the green cars the game will display the message "dead" a new game can be start by Pressing any button. If the frog hops onto the upper sidewalk , the game situation will be won, and the message "pass" will be displayed.

   There are three portions of the level to complete divided by rest portions on lane4 and lane9 (0 based lane indexing), the last portion is designed to force the player to move horizontally with the cars instead of just waiting for a gap in the cars to line up vertically.

2. Additional information
   The game was set to be really hard to pass even you choose the slowest speed, the switch 7. However, unexpected behavior mentioned above includes a situation, at which all the cars would stop moving and it would lead to an easy win.

Block diagram:

The actual program is mostly the same as my proposal.The new game output of the end module is also an input to all of the lanes which I have not draw out on the diagram.