2014 SDSU Program Design Competition

Turnz

In the "Turnz" game, there is an 11*11 vertical wall (11 vertical columns and 11 horizontal rows). A single player's **goal is to get the "Blobs" to the checkered "finish" square.** The play does this by rotating the screen, so in the game panel there should be two buttons to rotate the screen (clockwise and counter clockwise). There will multiple stones blocking or holding the blob, and these stones are at random locations. Of course, borders without stones would be considered as the boundary, and the blob will never "fall off the world".

An example of the game-play is as follows:

Initial state: the locations of the "blob" and the "stones" are displayed.
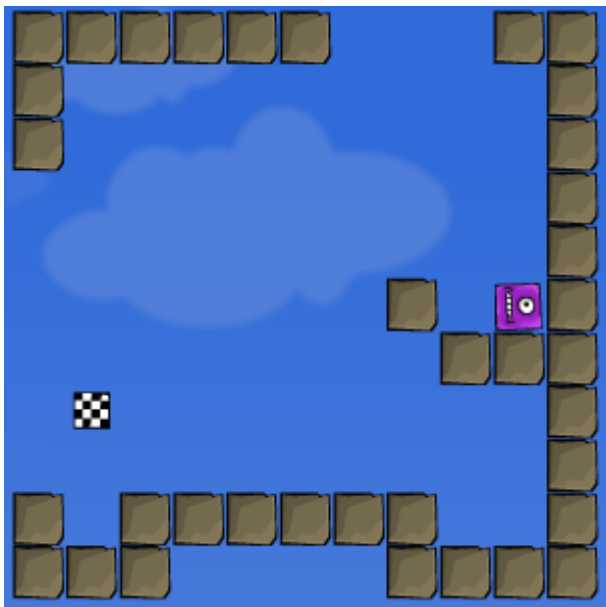

Fig1. Initial State

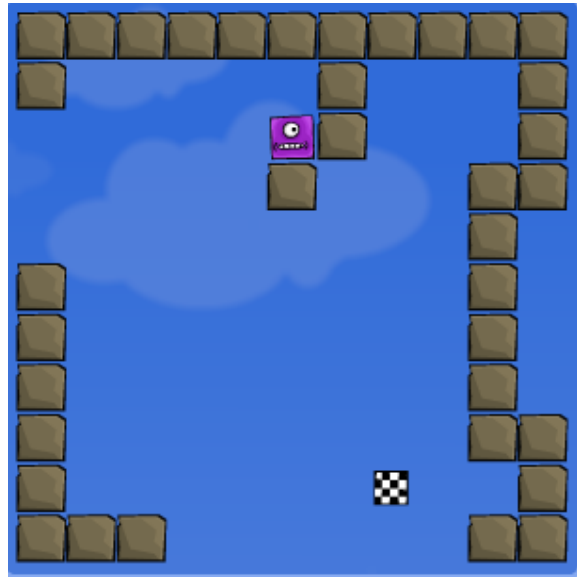The 1st round: rotate left once. The blob is held by one stone in its new location.

Fig2. Round1

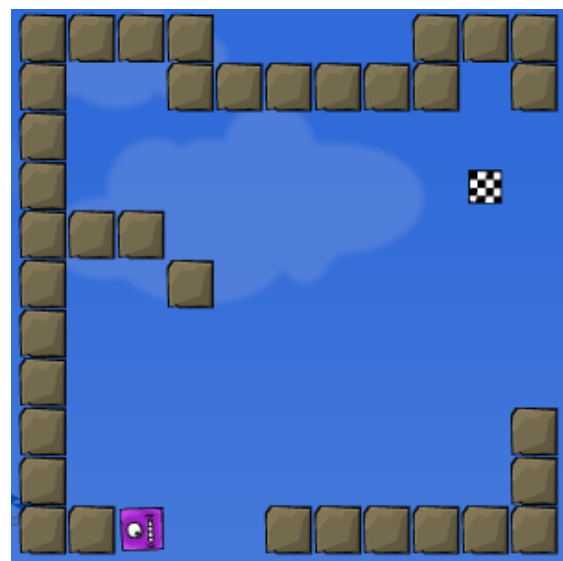The 2nd round: rotate left again, and the blob finds its new location on the bottom line.

Fig3. Round2

The 3rd round: rotate right, and the player is trying to find the way out for the blob.
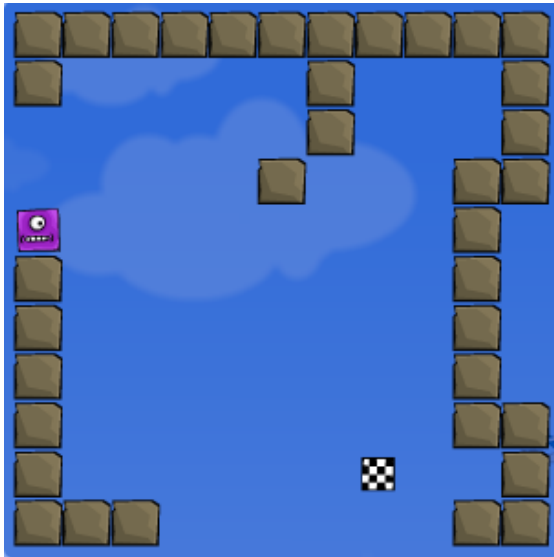
Fig4. Round3

Many rounds later, by rotating left or right, the player finally let the blob go into the "checked finish square". **Then this stage is cleared, and the player is promoted to the next stage.** The next stage is similar to the previous stage, but the locations and setting of the stones may be different. *There may be multiple blobs and one checked finish square in the advanced stages, and in such case the player should rotate all the blobs into the checked finish square.* The difficulty should also be increased. Please design at least 5 stages to challenge the player.

Please maintain a ranking list of the players with the top-10 lowest rotation rounds. If the player uses too many rounds (i.e. > N, and N is a big number you define), then game over and the player's mission fails. Your algorithm should have at least one solution to rotate the blobs into the checked finish square.

You can design this game for either human-to-human or human-to-computer, or both. Also you can develop this game using any software tools available to you. You may create a web based application, a C/C++ program, a Visual Basic/C++/C# program, Java, Object C, some other programming environment, or a combination of multiple programming languages. Your program should be able to run on one typical platform: such as Windows XP/7/8. If you choose a browser-based solution, it should work on at least one typical Web browser: Internet Explorer, Firefox, Google Chrome or Safari. *You can also choose to implement your program in smart phone platforms, such as Android or iOS, instead of implementing a desktop version.* **Due to platform compatibility issues, it is recommended that you bring your own laptop (or smart phone or iPad platforms) to SDSU for demonstration and presentation during the competition day.**

Your work will be judged on,

1. Correctness of the solution
2. Uniqueness of the design
3. Completeness of solution
4. User-interface design

Team members are encouraged to participate during the presentation. All parts of the presentation and source code should be burned to a clearly-labeled CD and submitted to the program design competition committee on the day of the competition.

If you have any questions regarding the problem, please do not hesitate to ask us (wei.wang@sdstate.edu or sung.shin@sdstate.edu). Good luck and have fun!