

NEED.SHEEP.MOAR - Physical Game Prototype

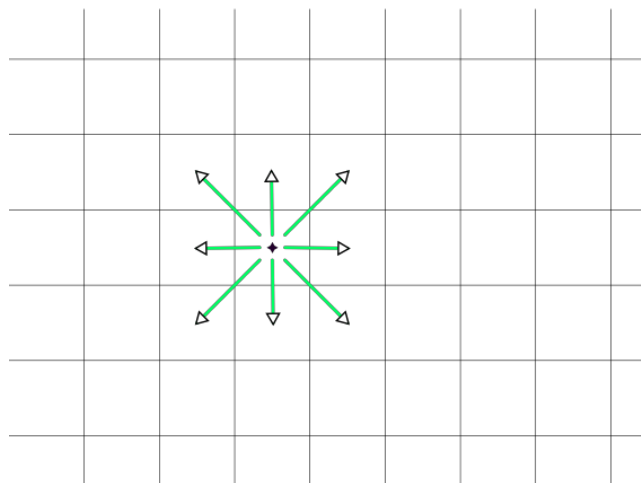
Introduction



Our physical prototype consists of a board game with square tiles. It emulates the following elements:

- Free player movement
- Sheep moving away from the player
- Sheep jumping over a fence when entering the hot zone
- Constant sheep count with random spawning (to simulate random sheep movement)
- Sheep-attraction and invisibility power-up

The square shape of the tiles offers eight directions in which the characters can move, giving quite a good representation of free movement.



Moving directions. On the square tiled map, the players and the sheep are able to move in the 8 directions, shown in the picture by the green arrows.

The goals for our prototype were to study the overall game dynamics, check if there were any ways to “cheat the system” and discover problematic situations we didn’t think of so far. If our game works, the players will mainly be focused on collecting sheep with an occasional small detour to make the life harder for the others. Behaviour like just waiting at certain positions for several rounds should not give any player an advantage.

		1		2	3	4		5		6	
	6	.	.	.	.	.	.	.	.	6	
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Map. The map of the game consists of numbered square tiles.

The border tiles (marked with grey) is the “dead zone”, where the players are able to move freely, but the sheep cannot enter. The “hot zone” for each player (marked with orange) consists of 4 tiles - once a sheep enters this zone, it will jump over the fence.



Physical Prototype.

Rules

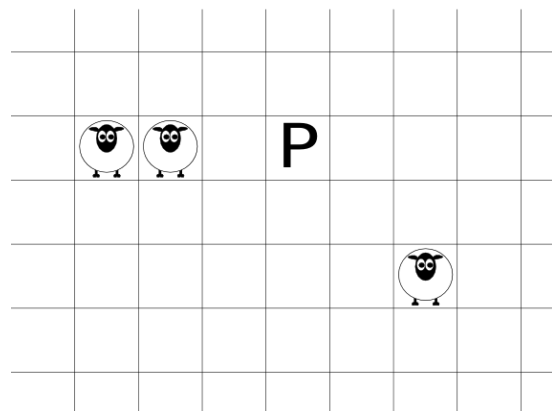
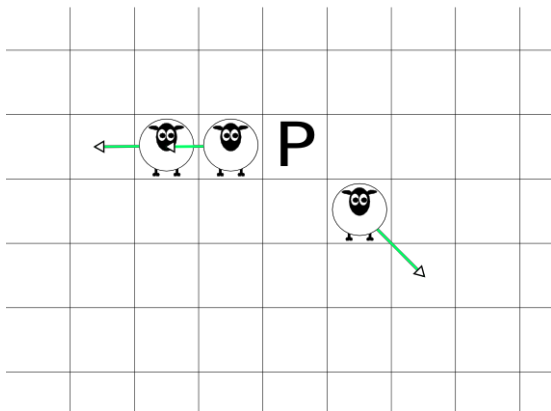


Turn Structure

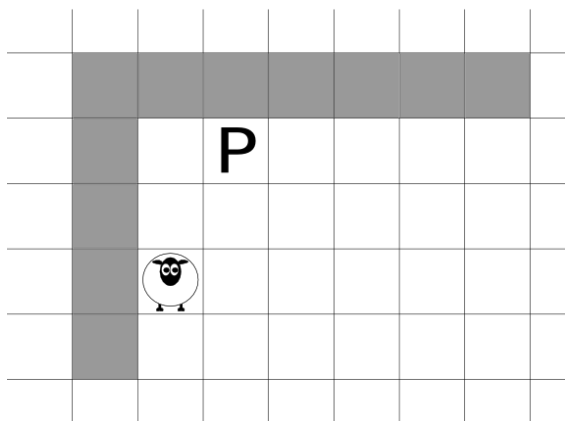
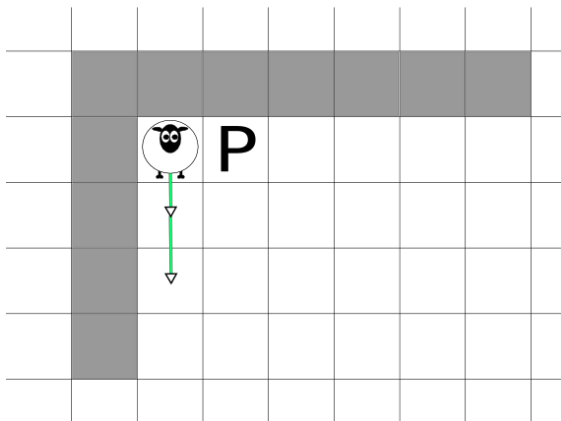
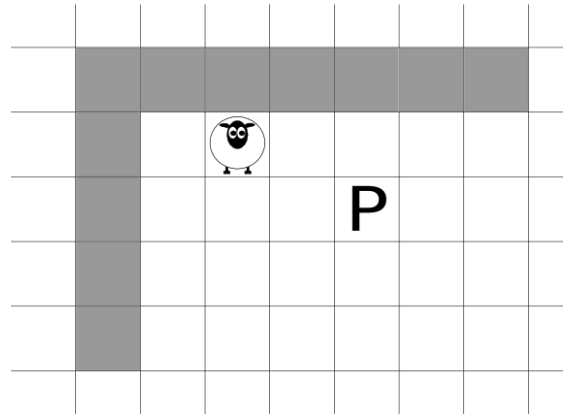
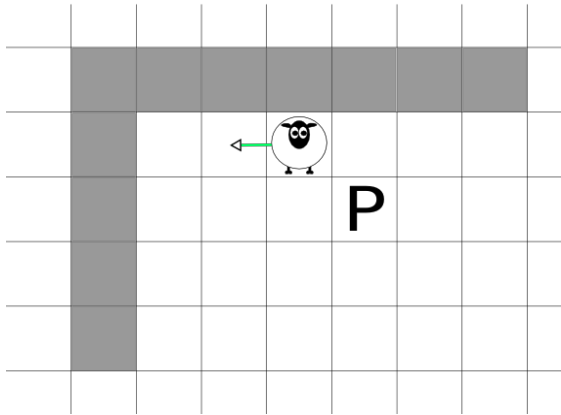
The different players move in a round robin fashion. They can move to any of its eight adjacent tile if there isn't an obstacle (like a wall). They can also pass a move and stand still. The diagrams below each rule visually explains the rule above by offering a relevant example. In the diagrams, "P" symbolizes the position of the player after his move. The left diagram shows the positions of the sheep and the direction they will move by (the green arrow); the right diagram shows the corrected position of the sheep after the player's movement.

After every move, the following actions are taken and repeated until there is no more movement (priority in that order):

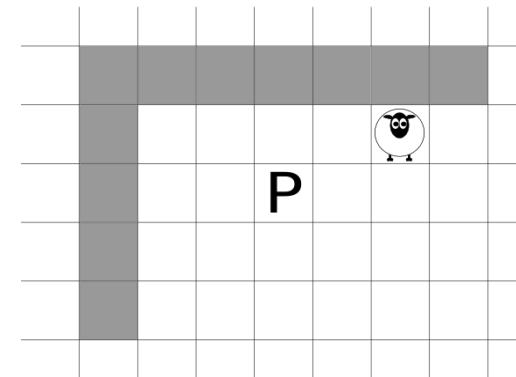
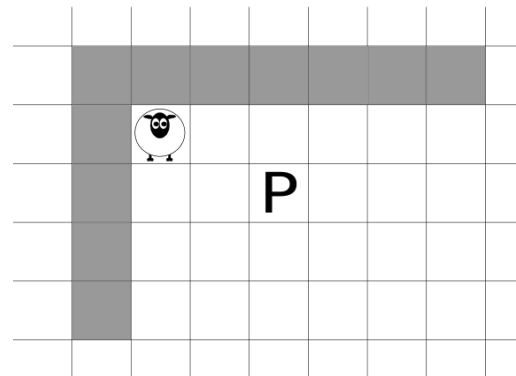
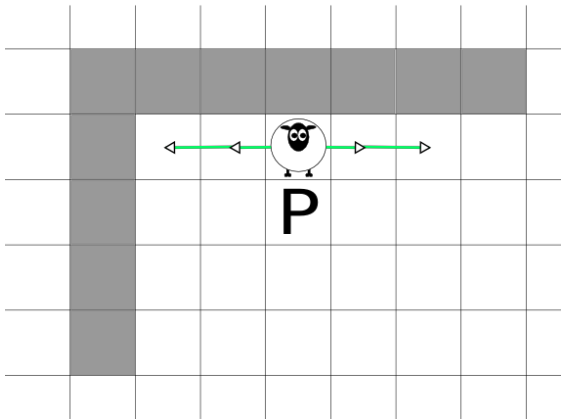
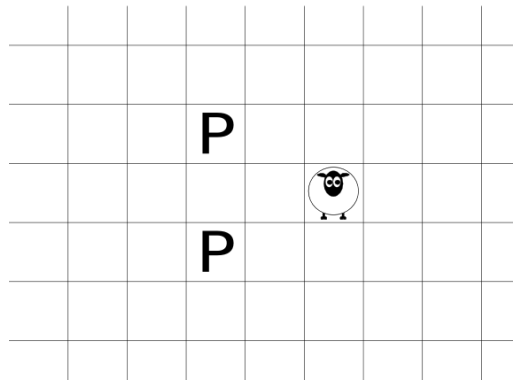
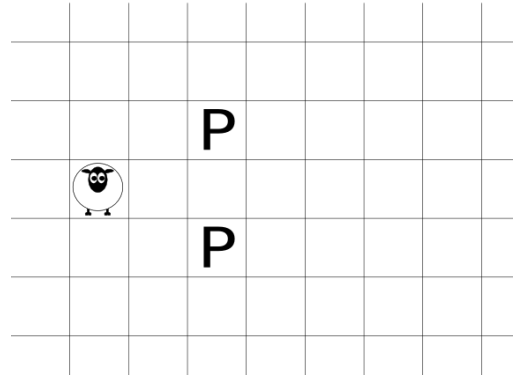
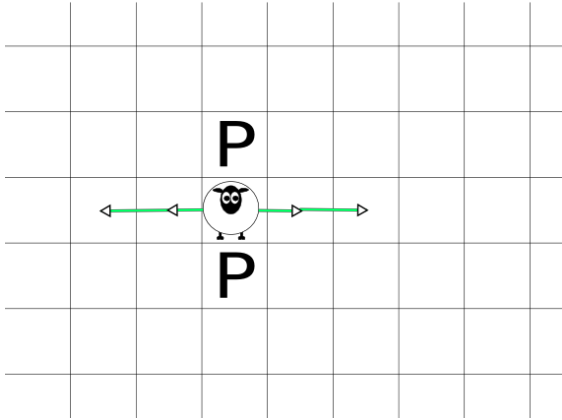
- All players move the sheep on adjacent tiles one tile away from the player. If the new tile is already occupied by a sheep, it will be pushed away in the same direction.



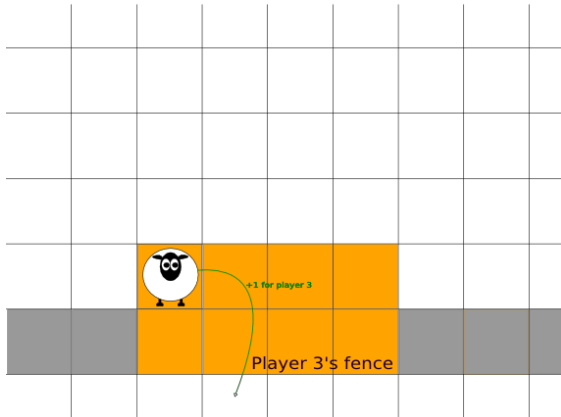
- If the sheep can't move in a straight line away from the player (e.g. if there is a wall), the sheep moves to the tile that does violate the straight-line rule the least.



- On conflicting situations (e.g. player-sheep-player, spawning on other sheep, pushing sheep to wall with 90°) the sheep will move to a random legal tile nearby (use dices).



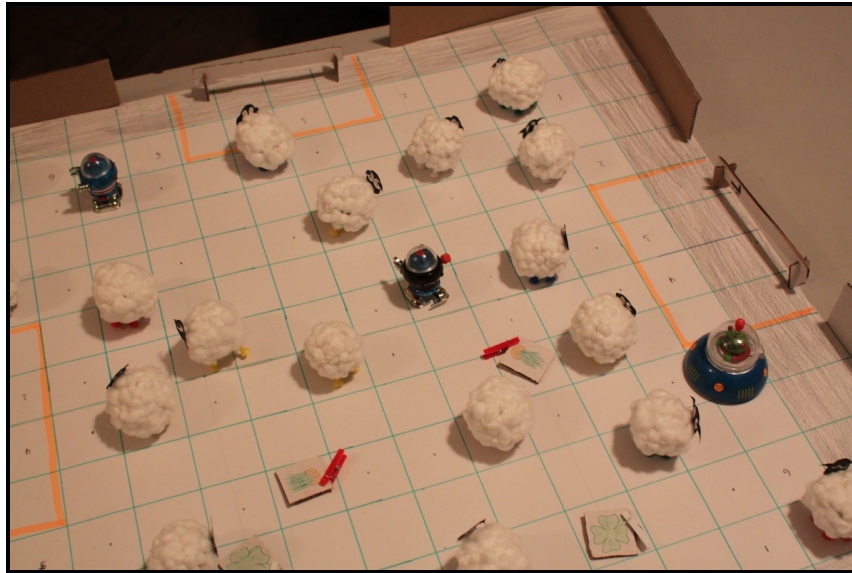
- If a sheep enters a hot-zone, the player owning the fence gets a point and the sheep is placed on the board randomly. If a fence doesn't belong to a player, the hot-zone has no effect.



The random elements should encourage the player to drive the sheep more like a mob. We don't want the players to figure out exactly where every single sheep will go before every move, since this won't be possible in the real game either.

The game lasts a fixed number of rounds (e.g. 50); the player that has collected the most sheep wins. After a sheep jumps a fence, it is placed on a 6 by 6 grid by throwing two dices. After placing a new sheep, another dice gets tossed to determine if a power-up should spawn (5: invisibility, 6: goody). The power-ups are placed the same way. Collected power-ups can be activated at the players turn and last for 5 (invisibility) or 6 (goody) moves.

Playing experience



While playing the game, we discovered a couple of flaws. Some of them might only affect our physical game, others will have effects on the gameplay of the real game and need to be considered in our actual implementation.

Prototype problems

One of the biggest problems of our prototype was the discrete player movement, both in time and space. While in the final game crossing a map will only take seconds, nobody would waste more than 10 moves doing something like that in the physical implementation. The players made their moves far more strategic than they probably would have in a realtime version. In the final game, the player will be able to move faster than the sheep and the reach of the repellent force will be much larger. We were however able to discover other shortcomings by focusing on the strategy aspect.

Sheep near edges or corners

Sheep in corners or edges are sometimes impossible to drive back into the center of the playfield. This will make it harder for a player to collect sheep from across the map. In the actual game, the random sheep movement will help to prevent that effect, but additional mechanisms might be required. Possible solutions are allowing the player to move further to the edge of the map than the sheep, or modifying the sheeps random movement to avoid edges more than they would otherwise.

For our physical prototype, limiting the sheeps movement by one more tile from the wall while allowing a player to move all the way up to the wall solved the problem.

While playing the physical prototype game, we realized that driving the sheep towards a wall and lining them up against it is a good strategy. This is due to the fact that once a player has the

sheep lined up against the wall, he can just move them into his hot zone one by one, since the sheep don't scatter as much because of the wall. In the final game, with some "free will"-movement of the sheep as well as the non-discretized movements in general, this "wall-line" strategy will probably not be as easy any more. It will also be easier to drive more sheep at once in the middle of the field.

Fence blocking

An unwanted strategy would be for a player, after getting the lead, to just wait in front of an opponent's fence, trying to block all the sheep. This strategy will only work on games with 2 players, since a 3rd player could catch up during that time. Our solution for this problem is to make the sheep ignore other players while approaching a fence. This will be implemented by reducing a player's repellent force while near an enemy's fence.

Obstacles

At first, we wanted to place a stable in the middle of the map for the new sheep to come out of. This resulted in less competing for sheep since the playfield got divided in separate regions for each player. Different dimensions and faster moving in the final version could solve this problem, but it is worth to try keeping the game competitive by its map design.

Map

When playing the physical prototype game with only three players, but with a square field, one side of the field is not used for any player's fence. Thus one of the three players will have the other two players on each side of him, while the other players only have one neighbor each. The playtesting showed that there is a disadvantage for the "sandwiched" player, because it is harder for him to fight for the sheep. The area where sheep are nearer to his fence than to any other is smaller and the walls where he can drive the sheep along are smaller.

For the real game we would thus like to implement a level with a triangle sheepfold, in order to have the same basic positioning conditions for all the players. Other maps can still be used to give one player an extra challenge.

Power-ups

The physical prototype is played with two power-ups: "goodies" for the sheep (attracting them rather than driving them away) and invisibility. For both of them, several different implementations with different outcomes are possible.

For the attraction-power up, the sheep can either stick to the player and move with him, or they can only move towards the player if they fall behind some virtual line (perpendicular to the player's movement direction), or, in other words, they only follow once they are behind the player's back.

For the invisibility power-up, the player can either have no influence at all on any other characters including the sheep (which means that he cannot move anywhere where there's already a sheep). Or he can move into a sheep, and thus push it away from him.

Testing didn't reveal any particular implementation as clearly superior. They all worked quite well.

Conclusion



The board game was fun to play, even if the gameplay was strongly simplified due to reduce bookkeeping for all the different states of the real game. This tells us that we are on the right track to create a great game.

We uncovered some small problems with the gameplay (fence blocking, sheep in corners) and will probably find some more during the implementation. But the overall game experience works as intended.

Factors to keep in mind during development are keeping the game fair (level design), active (numbers of sheep, power-ups) and competitive (the disadvantage of interacting with other players shouldn't be so high nobody does it). Finding the right balance will be key.