Performance Results with Test Scenarios

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Bird launches are randomized, and so, there are a few things that can be varied:

1. The maximum number of positions in the grid: change MAX_POSN in inc/comconst.h
2. Maximum number of walls: Even the number of walls is randomized, but the maximum possible value can be changed using MAX_WALLS in inc/coordconst.h
3. The maximum time before bird launches can be varied using MAX_BIRD_TIME in inc/coordconst.h
4. The number of pigs can be changed by adding port numbers in the portConfig file

The Test Scenarios

The number of games in each scenario is unequal. However, the least number of runs in a scenario is still 50, which allows us to extrapolate conclusions from the average number of hits per game pretty easily. Also, I have obviously not verified the results for all 2500 games, but I have manually verified a fair amount to ensure that it is correct.

A small sample output is included in the file called outputfile, in the birdypigs directory.

1. Stability testing: The game was allowed to run over-night with 10 positions to the grid, 6 pigs, and a maximum of 3 walls, with a MAX_BIRD_TIME of 5 seconds. At the time of writing this, the status was “Score is 3011 in 2333 runs”, averaging 1.29 pigs hit per game. This is pretty good, considering that the grid is tightly packed – some games resulted in 5 pigs getting knocked out due to cascades from a wall
2. Scalability/Stability: The number of positions was expanded to 20, the pigs to 8, with a MAX_BIRD_TIME of 4 seconds. The status was, “Score is 59 in 100 runs”, which is an average of 0.59 hits per game. This reduction seems reasonable, considering a majority of the launches would have landed in empty spaces, and the reduction in bird time and the nominal increase in the number of pigs was not enough to counteract this
3. The number of positions was changed back to 10, with the number of pigs reduced back to 6. The MAX_BIRD_TIME was reduced to 1 s in order to see how much the pigs were able to escape because they knew about the bird landing. The status was, “Score is 89 in 50 runs” which averages out to 1.78 hits per game. This is pretty good, considering how small the grid space is. Pigs are still able to move out of the way to some extent. With 6 pigs in 10 spots, the number of free spaces can be 1-4, depending on the number of walls. If the number of walls is 3, unless the bird is very unfortunate, it will land on a wall, causing catastrophic damage, or at least, land on a pig. Pigs don’t have a lot of space to maneuver, but they still do a pretty good job, mostly by sidestepping just one step to let the bird crash on the pavement. The improvement is 0.49 hits per game when the pigs have time to react, which is pretty good