Summary:

A game for warehouse associates to play to develop their skills in stacking non-conveyable (non-con) boxes

Image Style:

3D top-down game

Language Options:

- python using pygame
- c# using unity

Ways to Lose:

- **if** auto-side load > auto side limit **or** non-con load > non-con limit
- **if** x number of pallets collapse

Constants:

- auto-side limit (the lower the number, the more difficult the game)
- non-con limit (the lower the number, the more difficult the game)

- auto-side load (starts at 0)
- non-con load (starts at 0)

Objects:

- box
- pallet
- conveyor belt

Box:

Properties:

- must have length, width, and height dimensions (must be somewhat random)
- must have volume (length * width * height)
- must have weight (must be somewhat random)
- must have "load" (box.weight * box.volume)
- must be broken or intact (10% broken, 90% intact)

Actions:

- must be able to stack
- x, y, z coordinates collectively must be unique (can't have any boxes intersecting)

Pallet:

Properties:

- must have height restriction (6 feet for instance)
- must have area restriction (5 x 5 feet for instance)
- must have container to hold boxes
- must have three layers of volume: bottom, middle, top
- must have weight for each layer: bottom.weight, middle.weight, top.weight

(Notes):

- bottom weight is cumulative weight of first ⅓ of boxes in pallet
- middle weight is cumulative weight of next ⅓ of boxes in pallet
- top weight is cumulative weight of last ⅓ of boxes in pallet

Actions:

- must be able to add or remove box
- must collapse if weight distribution is in wrong order (ie. **not** bottom.weight > middle.weight > top.weight)
- must check that at least two layer's areas are less than 5 x 5 feet. if not, pallet must collapse
- must close pallet when height reaches 6 feet
- must update non-con load when pallet is closed

Conveyor Belt:

Properties:

- must have adjustable speed (option to adjust difficulty of game)
- must be able to start / stop
- must have animation that illustrates start / stop / speed

Actions:

- must have start / stop / speed functionality
- must update auto-side load when box reaches the top