APPENDIX

CONTENT OUTLINE

F=ma
- An object is launched in a random direction with a force vector overlaid on top. User can throw the object around. Equation shows the relative change in the force.
  Equation shown: F=ma (for one particle)
  Graph shown: none
  Options available: none
- Gravity is turned on. User can now vary gravity.
- Multiple particles
  Equation shown: F=ma (for one particle)
  Graph shown: y vs. x position for all particles
  Options available: [number of particles, gravity]
- Chaos: only two particles initialized next to each other with trails activated. "A small change in initial conditions can lead to chaos!"
  Equation shown: None
  Graph shown: y vs. x position for all particles
  Options available: [number of particles]

Momentum
- Two objects are launched at each other.
  Equation shown: p=mv for both objects.
  Graph shown: total momentum and individual momentum
  Options available: none
- Multiple particles
  Equation shown: p=mv for any two objects
  Graph shown: total momentum
  Options available: [number of particles]

Energy section
- Gravity: Object launched in a random direction
  Equation shown: $K = 1/2mv^2$ & $P = mgh$ (for one particle)
  Graph shown: kinetic energy, potential energy and total energy
  Options available: None
- Air Resistance: Particle launched in a random direction
  Equation shown: $K = 1/2mv^2$ & $P = mgh$ (for one particle)
  Graph shown: kinetic energy, potential energy and total energy
  Options available: [air resistance]
- Collisions: two objects are launched at each other
  Equation shown: $K = 1/2mv^2$ & $P = mgh$ (for one particle)
  Graph shown: kinetic energy, potential energy and total energy
  Options available: [Elasticity of collisions]

Friction section
- Two bodies are sitting on top of each other
  Equation shown: none
  Graph shown: force of friction in time
  Options available: none
- Static friction: can vary static friction
  Equation shown: f=s*Fn
  Graph shown: force of friction in time
  Options available: [static friction, add more bodies]
- Inclined plane: an object starts on an inclined plane
  Equation shown: f=s*Fn
  Graph shown: force of friction in time
  Options available: [static friction, add more bodies]

Rotational Motion
- Rolling motion: launch a circle rolling across the bottom
  Equation shown: v=rw
  Graph shown: theta vs. t, w vs. t, v vs. t
  Options available: [change graph, add object]

Full Sandbox
The following options are available:

- particles => circle/square
- friction
- elasticity of collision
- choice of equation => F=ma / v=u+at / p=mv
- show/hide vectors
- choice of graph => one particle / all particles position
- no equation

Glossary
Definitions of key terms
Link to external resources with annotations: doc

About
Credits, list dependencies and link to github source.