Revised Specification

General Specifications

* Implementation must support two distinct modes of execution building and running.
* Representation of gizmos must be in a 2D environment that has a fixed size.
* Ability to quit application at any time.
* Usage of L as standard based on edge length of a square bumper.

Standard Gizmos (Objects in a 2D environment)

Available objects that can be represented and interact in an environment.

Static (Non-moving) Gizmos:

A Shape that will deflect any moving object in case of a collision.

* Square Bumper
  + 4 Lines connected that represent a square.
* Circular bumper
  + Circle with a specific radius.
* Triangular Bumper
  + 3 Line that will represent a triangle.
* Outer Walls
  + Barriers for playfield and are generated whenever the ball hits it.
  + 4 Lines that will surround a 2D environment.

Interactive Gizmos:

* Absorber
  + Once a ball has entered it is being stored on the bottom right-hand corner.
  + If it’s triggered and has a ball shoots the ball straight upwards with a velocity of 50L/sec.

Moving Gizmos:

* Flipper: Rectangle shape that will rotate 90 degrees either left or right but not both directions in a 2D environment.

Ball Attributes:

* A circular shape that will have the ability to move around the 2D environment has approx. 0.5L diameter.
* Velocity range 0.01L/sec to 200L/sec, 0L/sec will be considered as stationary.
* Sustain a framerate of 20 frames per second.
* Reasonable interactions between all the objects (gizmos) in the 2D environment close to a representation of a real physical environment.
* Velocity should change based on gravity and friction.

Building Mode:

* Add a gizmo in the playing area (2D environment) without allowing objects to be placed on top of another (overlapping).
* Ability to adjust the gizmo positioning after it has been already placed on the playing area.
* Ability to rotate a gizmo 90 degrees clockwise with a pivot the centre of the object.
* Delete a gizmo from the playing area.
* Add a ball to the playing area in a specific position with a certain velocity without letting overlap with other gizmos.
* Ability to save the playing area (map) to a file named by the user. In a specific file format.
* The user will also be able to assign a trigger to an action or a set of actions.
* Ability to assign a keyboard button to 1 or more actions.
* Command Format (per line): opcode and 0 or more arguments with tabs between them.
* Opcodes:

Name of object (e.g. Triangle) then needs a name argument and the x y position.

Rotate along with an object name will rotate the object it for 90 degrees.

Delete along with an object name will delete the object.

Left Flipper pivots in north-west corner.

Right Flipper pivots in north-east corner.

Connect assigns a flipper to an object with first argument being the object and second being the type of flipper.

Gravity sets a global variable of gravity (physics) with an argument of in a floating point format.

Friction sets a global variable of friction between objects with 2 floating point arguments.

KeyConnect along with a key number, down (pressed)/up (release) along with a gizmo object name. It will connect the key to a specific gizmo.

* Load from a file named by the user.
* Switch to running mode.
* Quit the application.

Running Mode:

* Key press will have to result to triggers that are connected to objects’ actions (flippers turning and absorber shooting).
* Ability to switch to building mode at any time while first waiting until any moving objects reach the end of their transitional state.
* Quit the application.
* Visually smooth animation of motion of the ball.