

## Validation Testing Document

### Build Mode

#### **Test 1 (Circle)**

Description: Test if you can successfully add a circle to the build board

- Press the button named "Circle" on the left panel
- Press the grid square where you want the circle to be placed

Requirements : In build mode

Outcome: A circle will be added to the board at the desired grid space

Pass/Fail: Pass

#### **Test 2 (Triangle)**

Description: Test if you can successfully add a triangle to the build board

- Press the button named "Triangle" on the left panel
- Press the grid square where you want the triangle to be placed

Requirements : In build mode

Outcome: A triangle will be added to the board at the desired grid space

Pass/Fail: Pass

#### **Test 3 (Square)**

Description: Test if you can successfully add a square to the build board

- Press the button named "Square" on the left panel
- Press the grid square where you want the triangle to be placed

Requirements : In build mode

Outcome: A square will be added to the board at the desired grid space

Pass/Fail: Pass

#### **Test 4 (Left Flipper)**

Description: Test if you can successfully add a left flipper to the build board

- Press the button named "Left Flipper" on the left panel
- Press the grid square where you want the Left Flipper to be placed

Requirements : In build mode

Outcome: A Left Flipper will be added to the board at the desired grid space

Pass/Fail: Pass

### **Test 5 (Right Flipper)**

Description: Test if you can successfully add a right flipper to the build board

- Press the button named “Right Flipper” on the left panel
- Press the grid square where you want the Right Flipper to be placed

Requirements : In build mode

Outcome: A Right Flipper will be added to the board at the desired grid space

Pass/Fail: Pass

### **Test 6 (Absorber)**

Description: Test if you can successfully add an absorber to the build board

- Press the button named “Absorber” on the left panel
- Click on the grid space you wish your absorber to start on and drag to the desired finish grid space

Requirements : In build mode

Outcome: An absorber will be added to the board at the desired grid space(s)

Pass/Fail: Pass

### **Test 7 (Ball)**

Description: Test if you can successfully add a ball to the build board

- Press the button named “Ball” on the right panel
- A pop window will appear asking for the user to enter the X velocity
- upon entering the X velocity a new window will appear asking for the Y velocity
- Once both values are entered, Click on the grid space you wish your ball to be

Requirements :

- In build mode
- Values to be an Integer with a range of (???)

Outcome: A ball will be added to the board at the desired grid space

Pass/Fail: Pass

### **Test 8 (Place Circle In occupied space)**

Description: Test if you can add a circle to an already occupied grid space

- Press the button named "Circle" on the left panel
- Press the grid square where there is a gizmo already placed
- Print to console explains that "The Circle cannot be placed here."

Requirements : In build mode and at least one gizmo placed on the board

Outcome: A circle will not be added to the same grid space

Pass/Fail: Pass

### **Test 9 (Place Triangle In occupied space)**

Description: Test if you can add a triangle to an already occupied grid space

- Press the button named "Triangle" on the left panel
- Press a grid square where there is a gizmo already placed
- Print to console explains that "The Triangle cannot be placed here."

Requirements : In build mode and at least one gizmo placed on the board

Outcome: A triangle will not be added to the same grid space

Pass/Fail: Pass

### **Test 10 (Place Square In occupied space)**

Description: Test if you can add a square to an already occupied grid space

- Press the button named "Square" on the left panel
- Press a grid square where there is a gizmo already placed
- Print to console explains that "The Square cannot be placed here."

Requirements : In build mode and at least one gizmo placed on the board

Outcome: A square will not be added to the same grid space

Pass/Fail: Pass

### **Test 11 (Place a Left Flipper In occupied space)**

Description: Test if you can add a left flipper to an already occupied grid space

- Press the button named "Left Flipper" on the left panel
- Press a grid square where there is a gizmo already placed
- `Print` to console explains that "The Left Flipper cannot be placed here."

Requirements : In build mode and at least one gizmo placed on the board

Outcome: A Left Flipper will not be added to the same grid space

Pass/Fail: Pass

### **Test 12 (Place a Right Flipper In occupied space)**

Description: Test if you can add a right flipper to an already occupied grid space

- Press the button named "Right Flipper" on the left panel
- Press a grid square where there is a gizmo already placed
- `Print` to console explains that "The Right Flipper cannot be placed here."

Requirements : In build mode and at least one gizmo placed on the board

Outcome: A Right Flipper will not be added to the same grid space

Pass/Fail: Pass

### **Test 13 (Place an absorber In occupied space)**

Description: Test if you can add an absorber to an already occupied grid space

- Press the button named "Absorber" on the left panel
- Press a grid square where there is a gizmo already placed
- `Print` to console explains that "The Absorber cannot be placed here."

Requirements : In build mode and at least one gizmo placed on the board

Outcome: An Absorber will not be added to the same grid space

Pass/Fail: Pass

### **Test 14 (Gravity)**

Description: Test if you can successfully change the gravity applied to the ball

- Press the button named "Gravity" on the right panel
- A pop window will appear asking for the user to enter a new number for gravity
- Gravity is set automatically to 25
- enter the new value for gravity

Requirements :

- In build mode
- Values to be an Integer with a range of (???)

Outcome: The gravity will be changed to the desired value

Pass/Fail: Pass

### **Test 15 (Friction)**

Description: Test if you can successfully change the friction applied to the ball

- Press the button named "Friction" on the right panel
- A pop window will appear asking for the user to enter a new number for mu
- upon entering the value for mu a new window will appear asking for the value of mu2
- Friction mu is automatically set at 0.025 and mu2 is set to 0.025

Requirements :

- In build mode
- Values to be an Integer with a range of (???)

Outcome: The friction will be changed to the desired value

Pass/Fail: Pass

### **Test 16 (move Circle)**

Description: Test if you can successfully move a circle from one grid space to another

- Press the button named "Move" on the bottom panel
- Click on the circle you wish to move and Click the desired new grid space

Requirements :

- In build mode
- Have a circle on the board

Outcome: The circle will be moved to the new grid space

Pass/Fail: Pass

### **Test 17 (move Triangle)**

Description: Test if you can successfully move a triangle from one grid space to another

- Press the button named "Move" on the bottom panel
- Click on the circle you wish to move and Click the desired new grid space

Requirements :

- In build mode
- Have a triangle on the board

Outcome: The triangle will be moved to the new grid space

Pass/Fail: Pass

### **Test 18 (move Square)**

Description: Test if you can successfully move a square from one grid space to another

- Press the button named "Move" on the bottom panel
- Click on the square you wish to move and Click the desired new grid space

Requirements :

- In build mode
- Have a square on the board

Outcome: The square will be moved to the new grid space

Pass/Fail: Pass

### **Test 19 (move Left Flipper)**

Description: Test if you can successfully move a Left Flipper from one grid space to another

- Press the button named "Move" on the bottom panel
- Click on the left flipper you wish to move and Click the desired new grid space

Requirements :

- In build mode
- Have a left flipper on the board

Outcome: The left flipper will be moved to the new grid space

Pass/Fail: Pass

### **Test 20 (move Right Flipper)**

Description: Test if you can successfully move a Right Flipper from one grid space to another

- Press the button named "Move" on the bottom panel
- Click on the left flipper you wish to move and Click the desired new grid space

Requirements :

- In build mode
- Have a right flipper on the board

Outcome: The right flipper will be moved to the new grid space

Pass/Fail: Pass

### **Test 21 (move Absorber)**

Description: Test if you can successfully move an absorber from one grid space to another

- Press the button named "Move" on the bottom panel
- Click on the absorber you wish to move and and Click the desired new grid space

Requirements :

- In build mode
- Have an absorber on the board

Outcome: The absorber will be moved to the new grid space

Pass/Fail: Pass

### **Test 22 (move Circle occupied space)**

Description: Test if you can unsuccessfully move a circle from one grid space to another occupied space

- Press the button named "Move" on the bottom panel
- Click on the circle you wish to move and and Click the desired new occupied grid space

Requirements :

- In build mode
- Have a circle on the board
- Have another gizmo on the board for occupied space

Outcome: The circle will not be moved to the occupied grid space

Pass/Fail: Pass

### **Test 23 (move Triangle occupied space)**

Description: Test if you can unsuccessfully move a triangle from one grid space to another occupied space

- Press the button named "Move" on the bottom panel
- Click on the triangle you wish to move and and Click the desired new occupied grid space

Requirements :

- In build mode
- Have a triangle on the board
- Have another gizmo on the board for occupied space

Outcome: The triangle will not be moved to the occupied grid space

Pass/Fail: Pass

### **Test 24 (move Square occupied space)**

Description: Test if you can unsuccessfully move a square from one grid space to another occupied space

- Press the button named "Move" on the bottom panel
- Click on the square you wish to move and and Click the desired new occupied grid space

Requirements :

- In build mode
- Have a square on the board
- Have another gizmo on the board for occupied space

Outcome: The square will not be moved to the occupied grid space

Pass/Fail: Pass

### **Test 25 (move Left Flipper occupied space)**

Description: Test if you can unsuccessfully move a left flipper from one grid space to another occupied space

- Press the button named "Move" on the bottom panel
- Click on the left flipper you wish to move and and Click the desired new occupied grid space

Requirements :

- In build mode
- Have a left flipper on the board
- Have another gizmo on the board for occupied space

Outcome: The left flipper will not be moved to the occupied grid space



Pass/Fail: Pass

### **Test 26 (move Right Flipper occupied space)**

Description: Test if you can unsuccessfully move a right flipper from one grid space to another occupied space

- Press the button named "Move" on the bottom panel
- Click on the right flipper you wish to move and Click the desired new occupied grid space

Requirements :

- In build mode
- Have a right flipper on the board
- Have another gizmo on the board for occupied space

Outcome: The right flipper will not be moved to the occupied grid space

Pass/Fail: Pass

### **Test 27 (move Absorber occupied space)**

Description: Test if you can unsuccessfully move an absorber from one grid space to another occupied space

- Press the button named "Move" on the bottom panel
- Click on the absorber you wish to move and Click the desired new occupied grid space

Requirements :

- In build mode
- Have an absorber on the board
- Have another gizmo on the board for occupied space

Outcome: The absorber will not be moved to the occupied grid space (works for both single and multi grid square absorbers)

Pass/Fail: Pass

### **Test 28 (rotate Triangle)**

Description: Test if you can successfully rotate a triangle

- Press the button named "Rotate" on the bottom panel
- Click on the triangle you wish to rotate through 90 degrees

Requirements :

- In build mode
- Have a triangle on the board

Outcome: The triangle will rotate through 90 degrees, Pressing again will rotate a further 90 degrees and so on

Pass/Fail: Pass

### **Test 29 (rotate Left Flipper)**

Description: Test if you can successfully rotate a Left Flipper

- Press the button named "Rotate" on the bottom panel
- Click on the Left Flipper you wish to rotate through 90 degrees

Requirements :

- In build mode
- Have a Left Flipper on the board

Outcome: The Left Flipper will rotate through 90 degrees, Pressing again will rotate a further 90 degrees and so on

Pass/Fail: Pass

### **Test 30 (rotate Right Flipper)**

Description: Test if you can successfully rotate a Right Flipper

- Press the button named "Rotate" on the bottom panel
- Click on the Right Flipper you wish to rotate through 90 degrees

Requirements :

- In build mode
- Have a Right Flipper on the board

Outcome: The Right Flipper will rotate through 90 degrees, Pressing again will rotate a further 90 degrees and so on

Pass/Fail: Pass

### **Test 40 (delete Circle)**

Description: Test if you can successfully delete a circle

- Press the button named "Delete" on the bottom panel
- Click on the Circle you wish to delete

Requirements :

- In build mode
- Have a Circle on the board

Outcome: The Circle will be removed from the board

Pass/Fail: Pass

### **Test 41 (delete Triangle)**

Description: Test if you can successfully delete a triangle

- Press the button named "Delete" on the bottom panel
- Click on the triangle you wish to delete

Requirements :

- In build mode
- Have a triangle on the board

Outcome: The triangle will be removed from the board

Pass/Fail: Pass

### **Test 42 (delete Square)**

Description: Test if you can successfully delete a square

- Press the button named "Delete" on the bottom panel
- Click on the square you wish to delete

Requirements :

- In build mode
- Have a square on the board

Outcome: The square will be removed from the board

Pass/Fail: Pass

### **Test 43 (delete Left Flipper)**

Description: Test if you can successfully delete a left flipper

- Press the button named "Delete" on the bottom panel
- Click on the left flipper you wish to delete

Requirements :

- In build mode
- Have a left flipper on the board

Outcome: The left flipper will be removed from the board

Pass/Fail: Pass

#### **Test 44 (delete Right Flipper)**

Description: Test if you can successfully delete a right flipper

- Press the button named "Delete" on the bottom panel
- Click on the right flipper you wish to delete

Requirements :

- In build mode
- Have a right flipper on the board

Outcome: The right flipper will be removed from the board

Pass/Fail: Pass

#### **Test 45 (delete Absorber)**

Description: Test if you can successfully delete an absorber

- Press the button named "Delete" on the bottom panel
- Click on the absorber you wish to delete

Requirements :

- In build mode
- Have an absorber on the board

Outcome: The absorber will be removed from the board (the entire absorber will be removed)

Pass/Fail: Pass

#### **Test 46 (Clear Board)**

Description: Test if you can successfully clear the board of all content

- Press the button named "Clear Board" on the bottom panel

Requirements :

- In build mode
- Have at least 1 gizmo or ball on the board

Outcome: All content placed on the board will be removed

Pass/Fail: Pass

### **Test 47 (Connect Left Flipper to key)**

Description: Test if you can successfully connect a left flipper to a key press

- Press the button named "Connect" on the bottom panel
- Press the left flipper you wish to connect to a key press
- Press the desired key for the left flipper action

Requirements :

- In build mode
- Have a left flipper on the board

Outcome: the chosen left flipper will be bound to the desired key press

Pass/Fail: Pass

### **Test 48 (Connect Right Flipper to key)**

Description: Test if you can successfully connect a right flipper to a key press

- Press the button named "Connect" on the bottom panel
- Press the right flipper you wish to connect to a key press
- Press the desired key for the left flipper action

Requirements :

- In build mode
- Have a right flipper on the board

Outcome: the chosen right flipper will be bound to the desired key press

Pass/Fail: Pass

### **Test 49 (Connect Absorber to key)**

Description: Test if you can successfully connect an absorber to a key press

- Press the button named "Connect" on the bottom panel
- Press the absorber you wish to connect to a key press
- Press the desired key for the absorber action

Requirements :

- In build mode
- Have an absorber on the board

Outcome: the chosen absorber will be bound to the desired key press

Pass/Fail: Pass

### **Test 50 (Disconnect Left Flipper from key)**

Description: Test if you can successfully disconnect a left flipper from a key press

- Press the button named "Disconnect" on the bottom panel
- Press the left flipper you wish to disconnect from a key press

Requirements :

- In build mode
- Have a left flipper connected to a key press on the board

Outcome: the chosen left flipper will be unbound

Pass/Fail: Pass

### **Test 51 (Disconnect Right Flipper from key)**

Description: Test if you can successfully disconnect a right flipper from a key press

- Press the button named "Disconnect" on the bottom panel
- Press the right flipper you wish to disconnect from a key press

Requirements :

- In build mode
- Have a right flipper connected to a key press on the board

Outcome: the chosen left flipper will be unbound

Pass/Fail: Pass

### **Test 52 (Disconnect Absorber from key)**

Description: Test if you can successfully disconnect an absorber from a key press

- Press the button named "Disconnect" on the bottom panel
- Press the absorber you wish to disconnect from a key press

Requirements :

- In build mode
- Have an absorber connected to a key press on the board

Outcome: the chosen absorber will be unbound

Pass/Fail: Pass

### **Test 53 (Play Mode)**

Description: Test if the system will successfully switch to play mode from build mode, achieve this by Pressing the build mode button above the game board

Requirements : In build mode

Outcome: build mode window closes and play mode window opens, whatever was displayed on the board in build mode will be displayed in play mode

Pass/Fail: Pass

### **Test 54 (Save)**

Description: Test if the system will successfully save a new build to the directory

- Achieve this by selecting options at the top left hand side of the screen then save
- File chooser window will open allowing you to name, save and select the directory to save the new build to

Requirements : In build mode

Outcome: text file is saved to specified directory

Pass/Fail: Pass

### **Test 55 (Load)**

Description: Test if the system will successfully load a pre-saved build to the build mode board for editing

- Achieve this by selecting options at the top left hand side of the screen then load
- File chooser window will open allowing you to select a pre made build from the directory

Requirements : In build mode, valid text file containing a build saved on directory

Outcome: valid build is displayed in the build mode board ready for editing, if invalid nothing displays

Pass/Fail: Pass