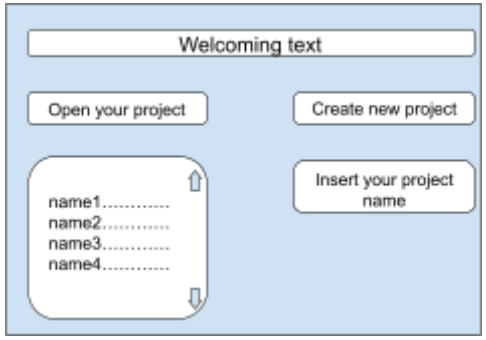
Project plan - Echo Room

0: Title scene

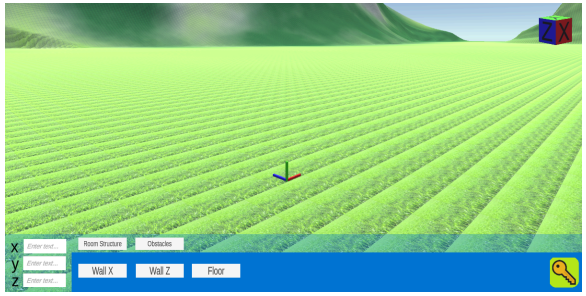
In the first scene the logo of the company is displayed for 1s.

1: Main menu - ?



Allows the creation of new projects.
Load saved projects

Scripts:



The second scene displays the workspace with the menu.

The workspace is a flat surface with a grass texture, mountains surround the workspace, and the sky is in the background. The static non-interactive direction pointer is placed in the middle of the workspace. The dynamic non-interactive plane indicator is attached to UI-Canvas in the top right corner, shoving the plane camera is looking at.

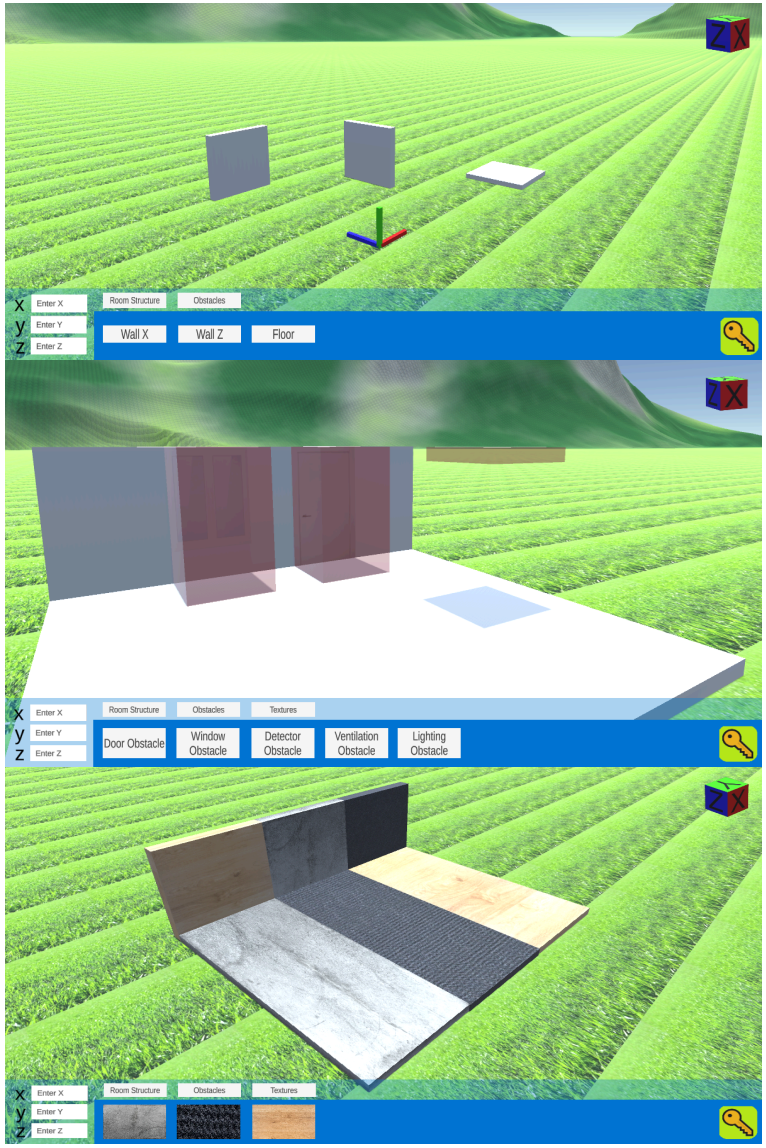
Camera controls:

Left Mouse button - provides moving on the screen by dragging

Right Mouse button - provides rotation

Scroll Mouse Button - provides zooming

R key - reposition of the camera



Main menu

Main menu is located at the bottom of the screen and contains:

- UI InputFields each responsible for one dimension of an object
- UI Buttons: Room Structure, Obstacles and Textures - switches between submenus (default: first active menu is RoomStructure)
- UI buttons: Left Arrow and Right Arrow - switches between scenes.

Submenus

RoomStructure contains: UI Buttons: Wall X, Wall Z, Floor, Key Icon.
Wall X, Wall Z and Floor buttons allow creating basic room structure.
Key Icon allows enabling/disabling objects from moving.

Obstacles contain: UI Buttons: Door Obstacle, Window Obstacle, Detector Obstacle Ventilation Obstacle, Lighting Obstacle. Buttons allow the creation of transparent blocks with appropriate images representing the type of obstacle.
To do : Distinguishing the door motiv.

Textures contain: UI Buttons: Beton texture, Black Carpet texture, Wood texture.
Buttons allow the application of textures on: Wall X, Wall Z, Floor object.

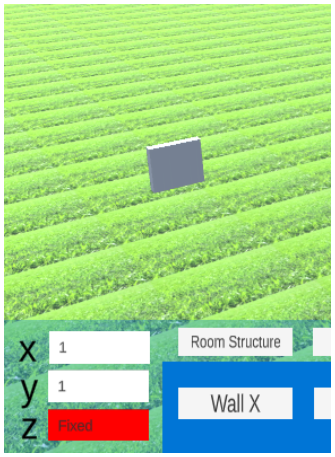
To do: Saving option, Lock all objects coordinates at once, Lock button for Obstacle objects

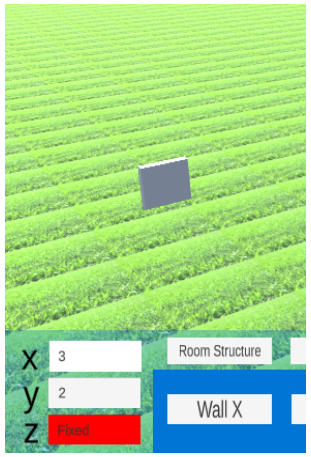
Resizing objects

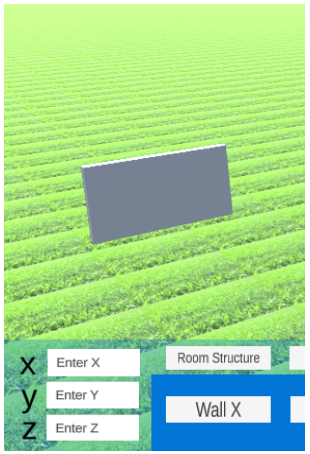
The size of each object can be changed by:

1. Clicking on an object
2. Entering new size of it
3. Clicking Enter to confirm our choice

To do: Let the user insert floating point numbers.





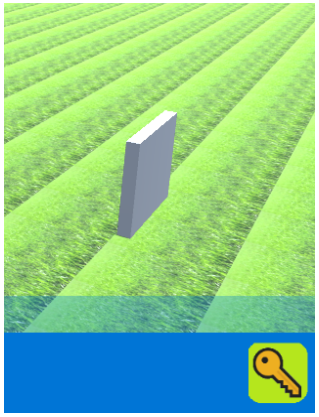


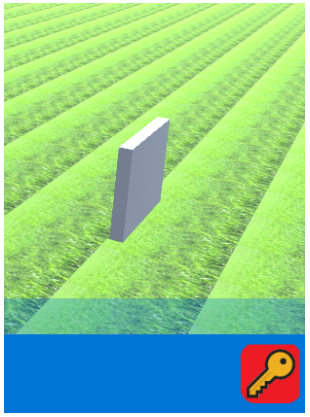
Locking coordinates

The movement of each object can be enabled/disabled by:

1. Clicking on an object
2. Clicking on a key button

To do: The same button available in the Obstacles menu,
General coordinates locker for all objects at once.



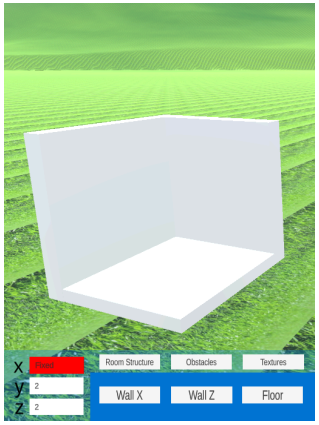


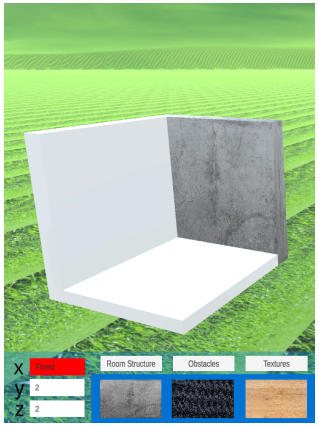
Applying textures

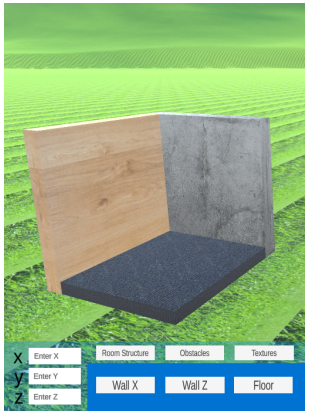
The texture can be applied by::

1.Clicking on an object
2. Clicking on a texture button

To do: Removing applied texture to default - white.







Object movement logic

Any objects can be dragged with the left mouse button held down.

Room structure objects: Floor, WallX and WallZ

Floor objects. If the floor collides with another floor object then it stops **(To do: should slide till left mouse button is released then stop)** till next left mouse button click.
Wall objects. If a wall collides with a floor object then it will be attached to one of its edges according to the wall's type and place of collision.
WallX case: this wall is fixed on the Z Axis. It can be attached only to the left or right bound of the floor. If it collides with front of back bound of the floor it will be attached to left or right bound of the floor acordingly to wall position during collision. It gets attached to the nearest bound.
WallZ case: this wall is fixed on the Z Axis. It can be attached only to the back or front bound of the floor. If it collides with left or right bound of the floor it will be attached to back or front bound of the floor acordingly to wall position during collision. It gets attached to the nearest bound.

Obstacles objects and Panels: Wall Obstacles, Ceiling Obstacles and Hanging Obstacles. These types of obstacles can be dragged anywhere till they enter the floor surface. Since then they cannot exit the floor area unless they are clicked again.

Wall Obstacles: Door obstacle and Window obstacle - Trajectory of movement is predicted to move along the walls.
Ceiling Obstacles: Detector Obstacle and Ventilation Obstacle - Trajectory of movement is predicted to move anywhere above floor surface.
Hanging Obstacles: Lighting Obstacles and Panels - Trajectory of movement is predicted to move anywhere above floor surface. Additionaly they can be dragged up and down when the right mouse button is held down.

Reference point - Point Zero

A reference point is placed in the right-down corner of the floor object with distance (0.25;0.25) from its edges. (0.25;0.25) - represents thickness of the walls.
Every Obstacle object displays its distance from the reference point. Distance is visible on Input Fields above each obstacle when the cursor points on it or clicks on it. Important to notice: distance is counted from the side of an object not from its center.
As Fields above objects are Input Fields it is possible to enter desired distance to place objects with higher precision by inserting length and confirming with enter.

Images and textures:

Doors		Windows		Textures	
	White Door Image		White Widow Image		Beton Texture

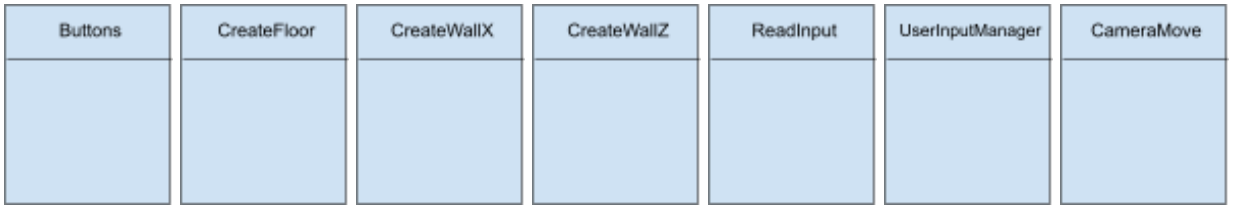
					Black Carpet Texture
	Black Door Image				Wood Texture

To do: Do we need Lighting and Detectors Images?
Does any texture can be applied anywhere?

Scene start position:
The navigation of the program is similar to the classical approach in CAD software. The created object is in the center of the view.

-> save project ->go to panels editor

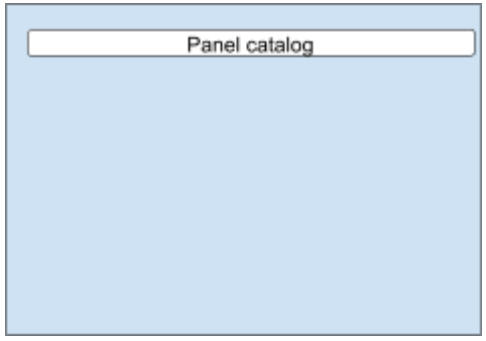
Scripts:



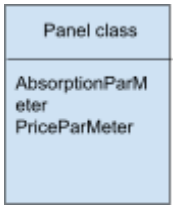
3: Panels editor

User can now apply acoustic panels attaching it to the transparent roof with a distance kept between lightning, security items, doors, and windows.

-data needed to be defined (excel file)



-> save project ->go to virtual walk



*extra 3D sound sources can be added to the scene if any exists

4: Virtual walk

User is placed in a precalculated position in the center of the room.
User changes his position by holding: WSAD or Arrows LRUD. Its local velocity is changed by dragging MouseButtons(L).
UI: Slider with white noise volume, above it user can see the strength of the noise.

-> back to panels editor or
-> go to cost calculations

5: Order

User now receive cost calculations and generate order in PDF.

6: End scene

Fixed animation of our background with a text field and timer to skip to the next scene. No interaction was previewed.