Validation documentation

The tables of this application use the following format for specifying the basic elements of the building: (ELEMENT\_TYPE, X1, Y1, X2, Y2, FLOOR\_NUMBER, ROOM, IS\_EXTERIOR, IS\_EXIT).

The validation program, written in Java, receives an ArrayList of such elements and filters them in order to obtain a class representation of the building.

The valid entries for ELEMENT\_TYPE are: “wall”, “door”, “window”, “stairs”.

*General constraints:*

* Valid entries for coordinates must be integers, larger than 0 and smaller than 100.
* Room numbers and floor numbers must also be integers.
* The elements of a certain room must have equal values for the room.
* All elements on the same floor must have equal floor numbers.
* If an elements is specified as being in room -1, that means that it belongs to the exterior of the floor but in no particular room therefore it must be specified as exterior.

*Room validation:*

* Room must be polygons and have at least one door.
* A wall must be specified only once per room.
* The walls of a room must not intersect in any inner points.

*Stair validation:*

* All elements inside stairs must have ELEMENT\_TYPE “window”, “door” or stairs. If you specify a “wall” elements inside stairs your building will be invalidated.
* When you specify stairs, a 3D model is built of all overlapping stairs. If the difference between the floors on which is specified stairs is not one once they are ordered then your building will be invalid.

*Floor validation:*

* Floors must be polygons and have at least one door on the first floor.
* The rooms on each floor must be inside its respective floor wholly.
* When the floors are ordered the difference between them must be exactly one.
* All floors except for floor 0 must have stairs that reach them.