

## gbXML Module Assignment

Duration: 2 weeks

Difficulty Level: Medium

**Assignment 1.** In this assignment, you need to generate a gbXML file that describes a three-layer exterior wall with gbXML. We will provide you with a starting point and also corresponding parameters of each layer. You need to generate and submit the whole file.

The following segment shows the overall structure and the details of layer 1. For layer 2 (id="Layer2-Insulation") and layer 3 (id="Layer3-Interior"), each layer contains the same set of elements as Layer 1. The value of each element in Layer 2 is twice the corresponding value in Layer 1. The value of each element in Layer 3 is 3/4 of the corresponding value in Layer 1.

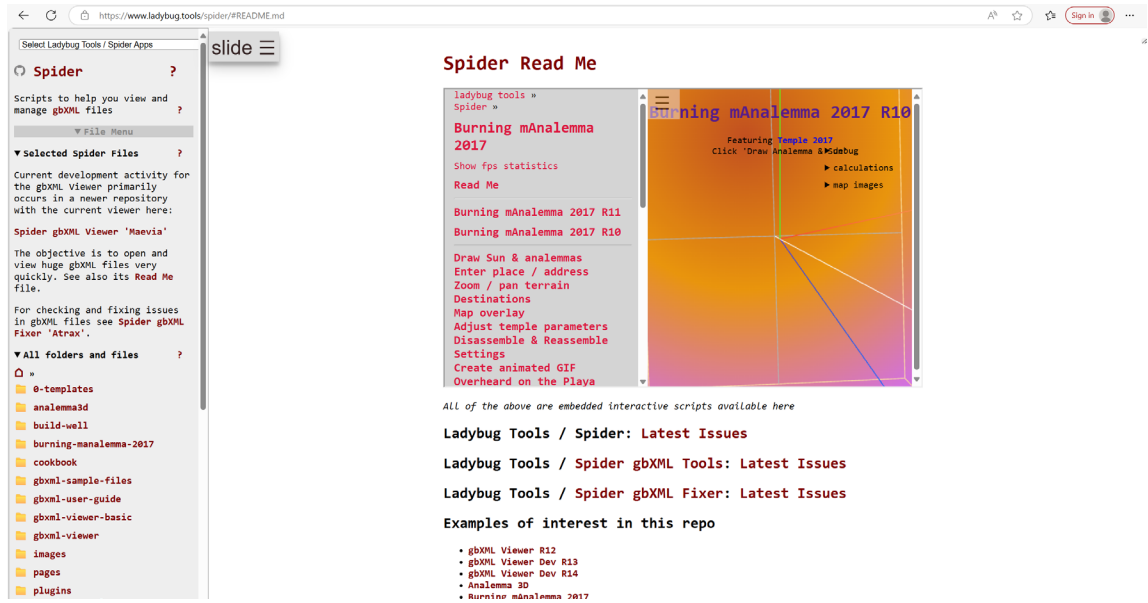
```
<Construction id="ExteriorWall-3Layered" surfaceType="ExteriorWall">
  <Name>3-Layered Exterior Wall</Name>
  <Description>Exterior wall with three distinct layers.</Description>
  <LayerId layerIdRef="Layer1-Exterior" />
  <LayerId layerIdRef="Layer2-Insulation" />
  <LayerId layerIdRef="Layer3-Interior" />
  <U-value unit="WPerSquareMeterK">0.25</U-value>
</Construction>
```

```
<Layer id="Layer1-Exterior">
  <MaterialId materialIdRef="mat-BrickExterior" />
</Layer>
```

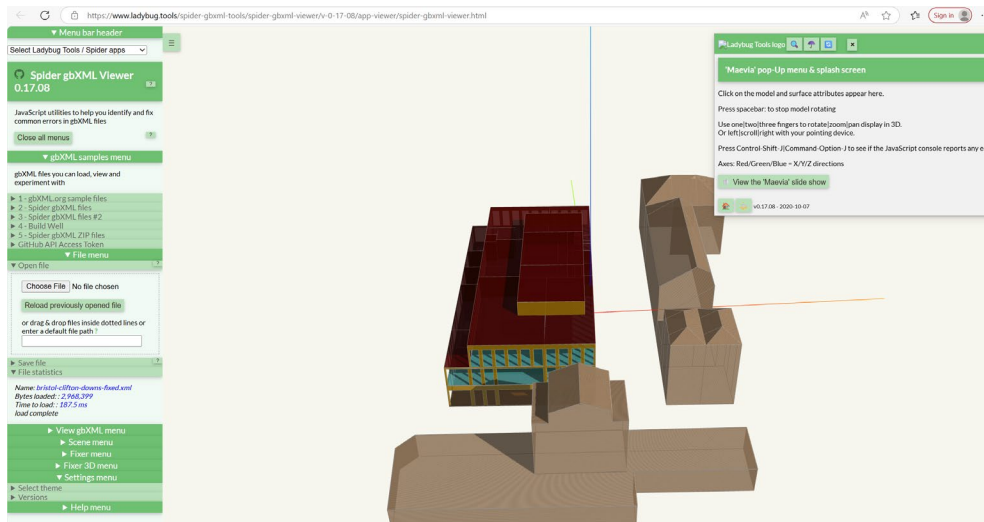
```
<Material id="mat-BrickExterior">
  <Name>Exterior Brick Veneer</Name>
  <Description>Standard exterior brick veneer.</Description>
  <R-value unit="SquareMeterKPerW">0.2</R-value>
  <Thickness unit="Meters">0.1</Thickness>
  <Density unit="KilogramsPerCubicMeter">1920</Density>
  <SpecificHeat unit="JoulesPerKilogramK">800</SpecificHeat>
  <Conductivity unit="WPerMeterK">0.7</Conductivity>
</Material>
```

**Assignment 2:** This is a hands-on exercise.

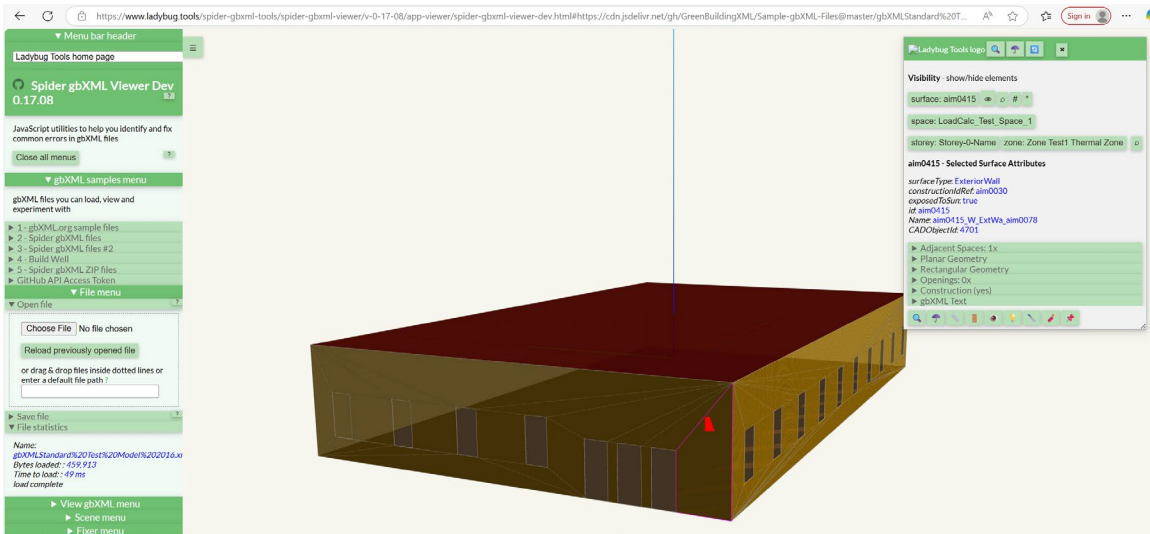
- (1) Go to the following page: <https://www.ladybug.tools/spider/#README.md>. You should see a page as follows:



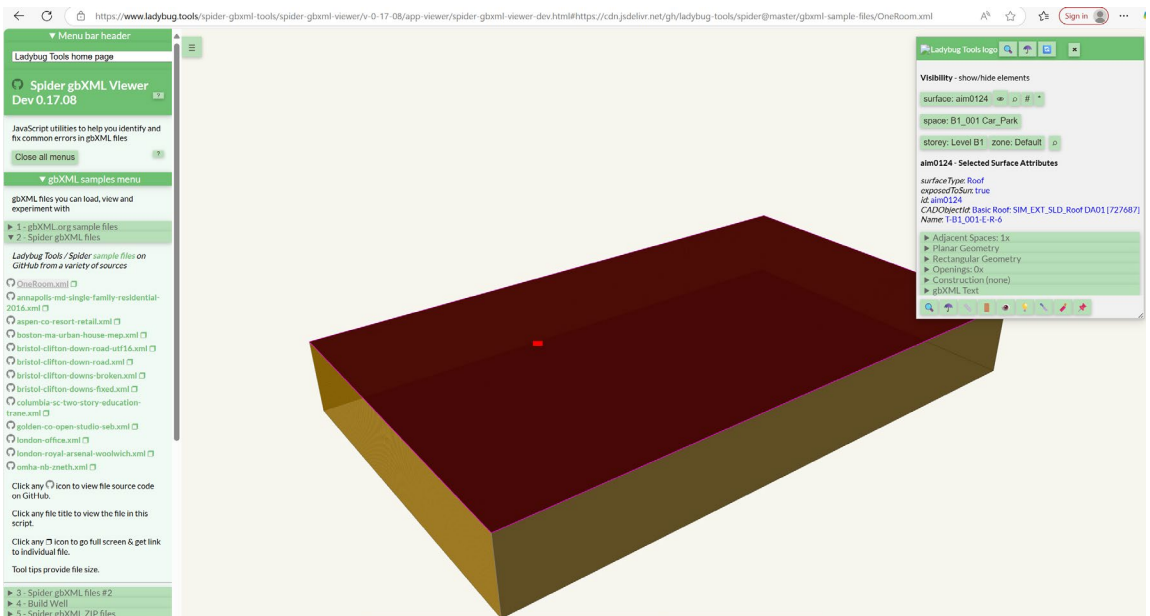
- (2) From left side, click on “Spider gbXML Viewer “Maevia”. You will see a page as follows.



- (3) Now from the left side, under “1 – gbXML.org sample files”, choose “gbXML Standard Test Model 2016.xml”. You should see the 3D structure of a room, with many windows on one wall and three doors on another wall. See below.



(4) Now from the left side, under “2 – Spider gbXML files”, choose “OneRoom.xml”. You should see the 3D structure of a room without any windows or doors. See below.



Your task of this assignment is to edit the “OneRoom.xml” file and add a door onto one sidewall. You can choose any sidewall (not the roof or ground). And you can add the door to any position of that sidewall. We have attached both XML files to this assignment. You can search “NonSlidingDoor” in the “gbXML Standard Test Model 2016.xml” file to start. After editing the XML file, you can load it into the Spider tool to double verify.

**Submission:** The submission of this hands-on exercise consists of two parts: (a) The edited “OneRoom.xml” file. Please highlight your changes. (b) Screenshots of your XML results in the visualization tool.