WEEK 7 ASSIGNMENT

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QUESTION 1

Provide a summary of the main concepts that went through about solar radiation.

ANSWER:

Solar Radiation: Solar radiation is a radiant energy emitted by the sun. The energy radiated is in the form of electromagnetic waves. About half of the radiation is in the visible short-wave part of the electromagnetic spectrum. The other half is mostly in the near-infrared part, with some in the ultraviolet part of the spectrum.

Dispersion: the separation of light into colours by refraction or diffraction with formation of a spectrum. Each colour bends by a different amount when refracted by the ozone layer or a glass. That's why visible light is split, or dispersed, into different colours when it passes through the ozone or prism. Shorter wavelengths, like purple and blue light, bend the most. Longer wavelengths, like red and orange light, bend the least.

Scattering: When light passes from one medium to any other medium say air, glass or water then a part of the light is absorbed by particles of the medium preceded by its subsequent radiation in a particular direction. This phenomenon is termed as Scattering of light. The intensity of scattered light depends on the size of the particles and wavelength of the light. Shorter wavelength and high frequency scatter more due to the waviness of the line and its intersection with a particle. The wavier the line, more are the chances of it intersecting with a particle. On the other hand, longer wavelength have low frequency and they are straighter and chances of colliding with the particle is less so the chances are less.

Reflection: It is a process where the incident light bounces off the surface. The electromagnetic waves simply bounce back to the space when it hits the earth's atmosphere. The earth reflects 36% of the rays back into the space.

Solar Radiation depends on: 1) Position of the sun

2) The weather condition

3) The site altitude over the sea altitude

4) Sunshine hours

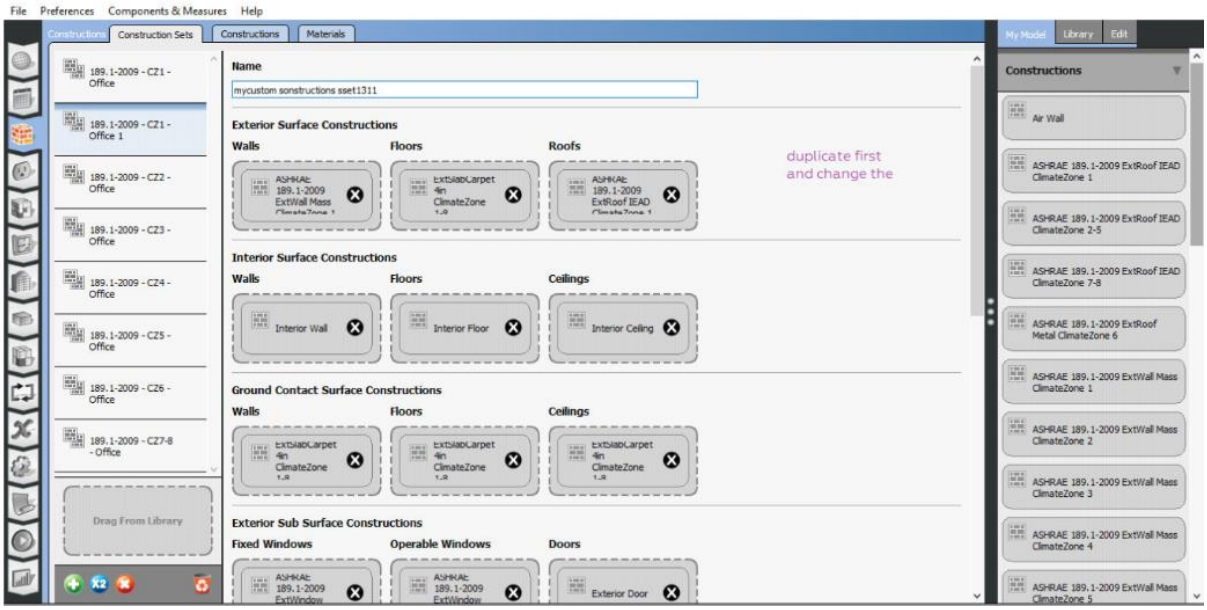
Mean radiant temperature: It is the temperature of the equivalent black enclosure with which it would exchange the same radiative flux exchanged with all other surfaces.

Operative temperature: It is the virtual ambient temperature with which the sum of the radiative thermal and convective linearized flow is exchanged which exchanges the air and all the other surfaces.

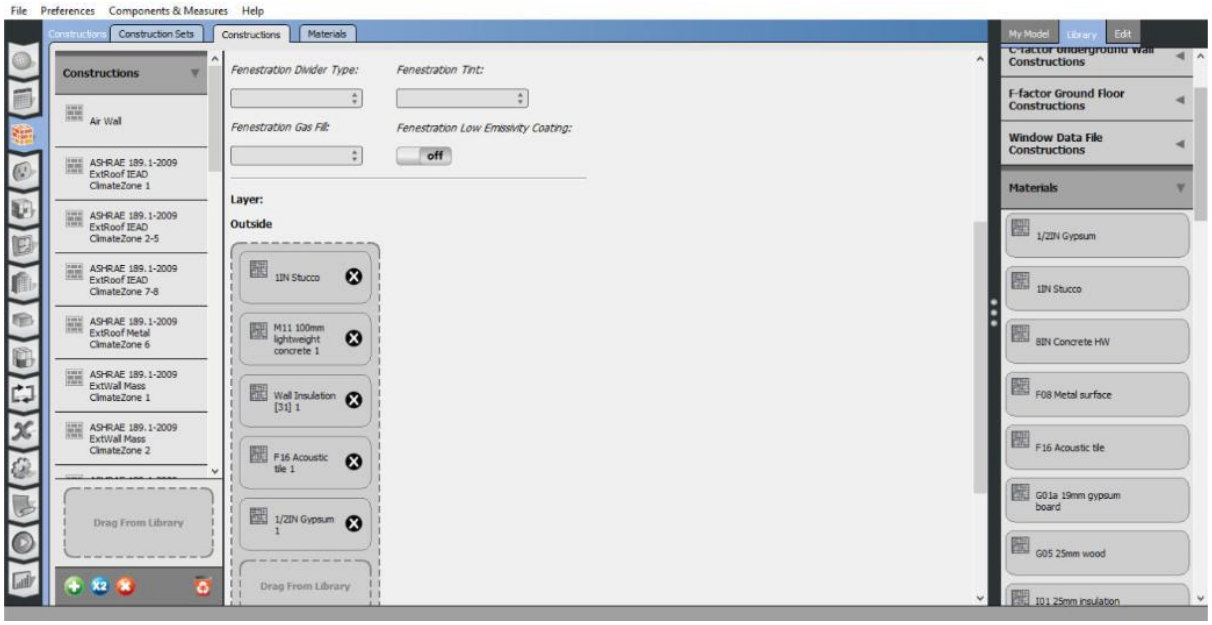
QUESTION 2

Create a pdf file with screenshots of all of the steps we went through in the second lesson on Open Studio and explain briefly the reason behind the use of each step.

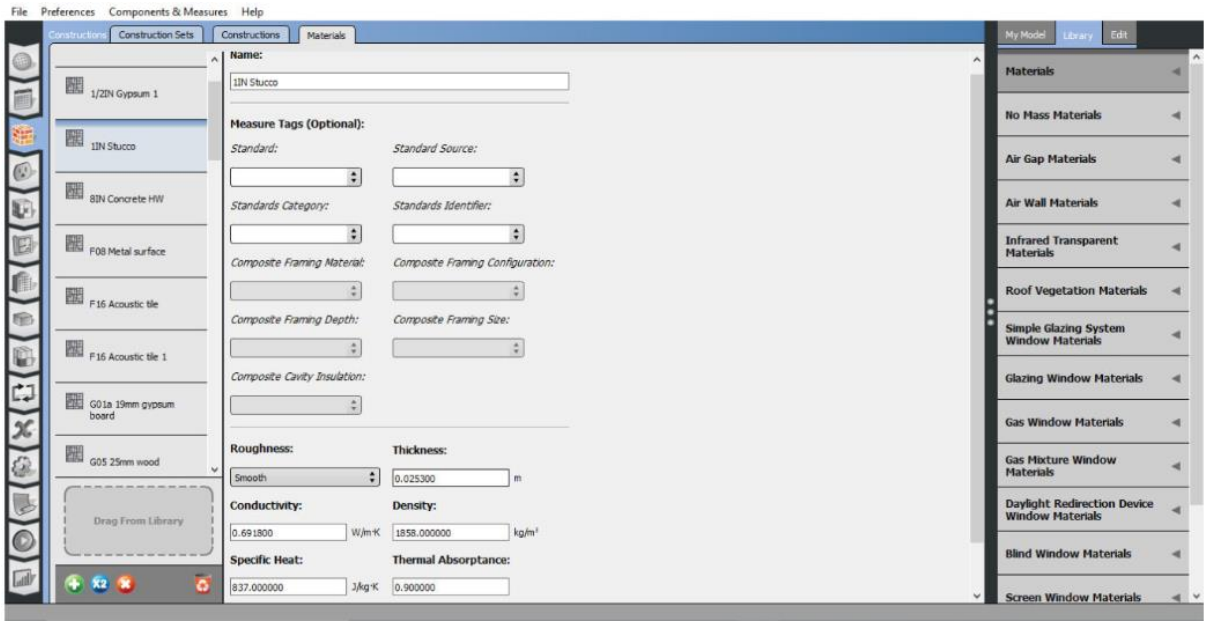
ANSWER:



- Construction sets
- Create new wall
- Changing the characteristics.



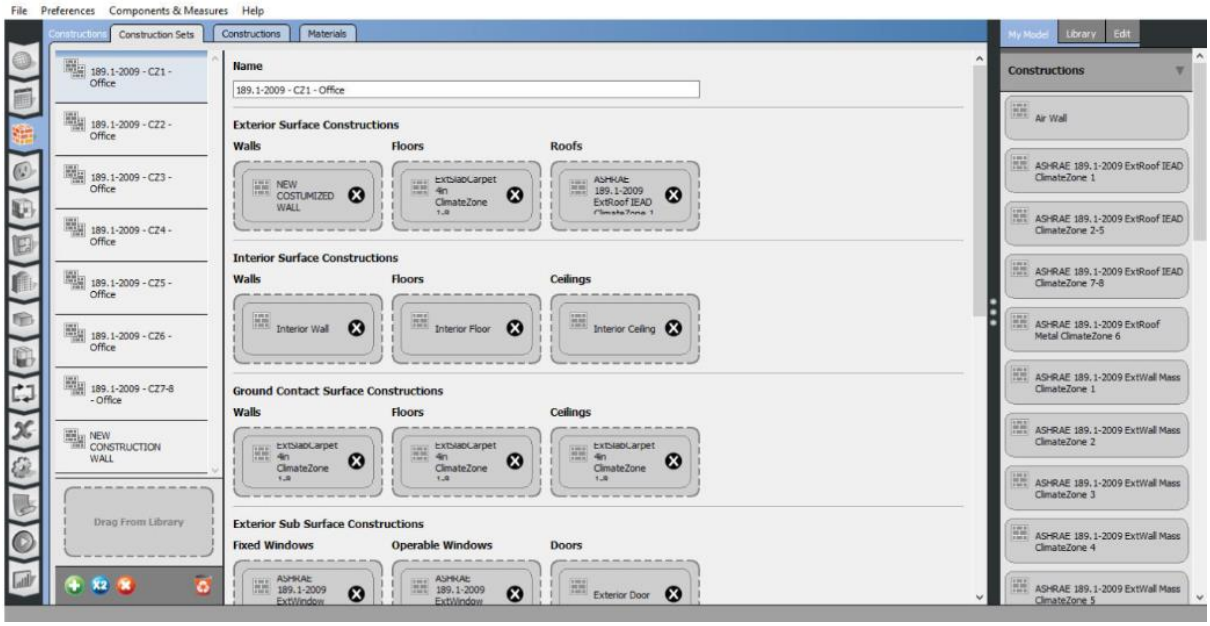
- Construction tab
- Create new type of wall
- Choose materials where the order should be from outside to inside.



To change/check characteristics:

- Material tab

We can edit the properties of the existing one or we can create a new one by duplicating it.



New wall with new materials