

WEEK 6 SUBMISSION

QUESTION 1:

Provide a summary of the main concepts that went through about solar radiation (formulas are not needed).

ANSWER 1:

Solar irradiance:

Solar irradiance refers to the radiant energy per unit area per unit time on the surface of solid earth after solar radiation has absorbed, scattered, and reflected in the atmosphere. Its unit is: Watt / square meter (W / m^2).

Diffuse and direct beam solar radiation:

"Direct radiation" is also referred to as "beam radiation" or "direct beam radiation". It is used to describe the solar radiation that travels linearly from the sun to the surface of the earth.

On the other hand, "scattered radiation" refers to sunlight that is scattered by molecules and particles in the atmosphere but still reaches the surface of the earth.

Direct radiation has a clear direction, but diffuse radiation only moves in either direction. If the radiation is direct, all rays travel in the same direction, so objects can immediately block them. This is why shadows are generated only when direct radiation is blocked.

Absorption of solar radiation:

Some of the radiation reaching the object is absorbed and the rest is reflected. Generally, the absorbed radiation is converted into thermal energy, which increases the temperature of the object.

Air mass:

Air quality is the amount of air defined by temperature and the amount of water vapor. The air mass covers hundreds or thousands of miles and adapts to the characteristics of the underlying surface. They are classified based on latitude and area of continental or oceanic origin.

The solar radiation density:

The annual average maximum solar radiation maximum density is the solar constant, which is $1367 \text{W} / \text{m}^2$.

Solar energy: availability

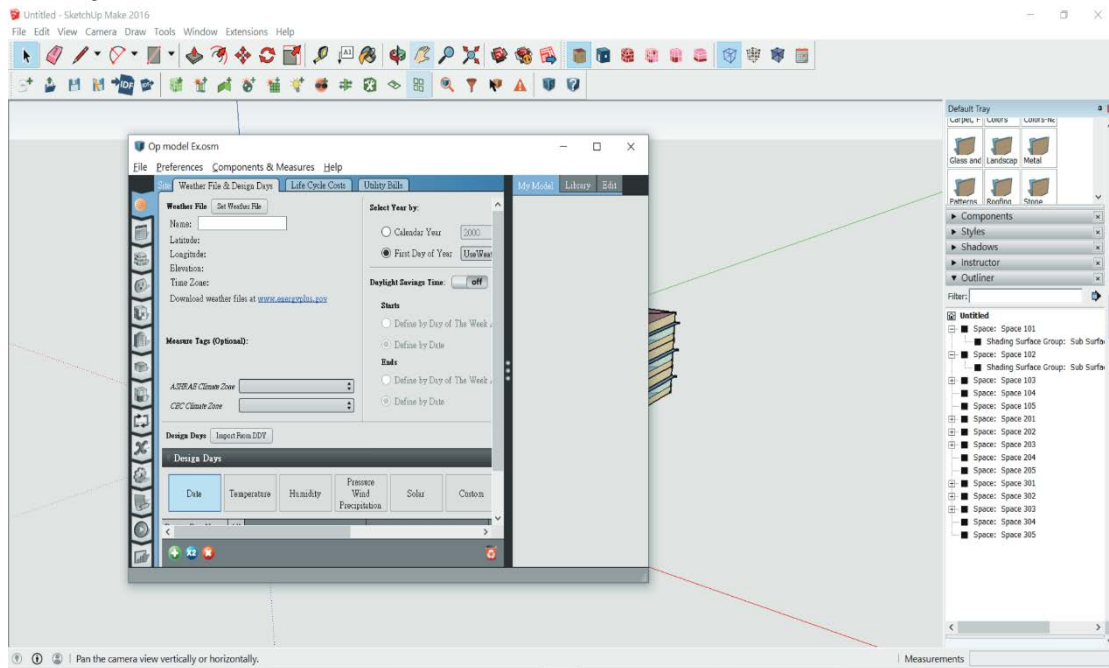
Every day, the sun provides a lot of sunlight to the earth, half of which is reflected into the atmosphere, but the earth absorbs about 385 trillion joules of solar energy every year.

QUESTION 2:

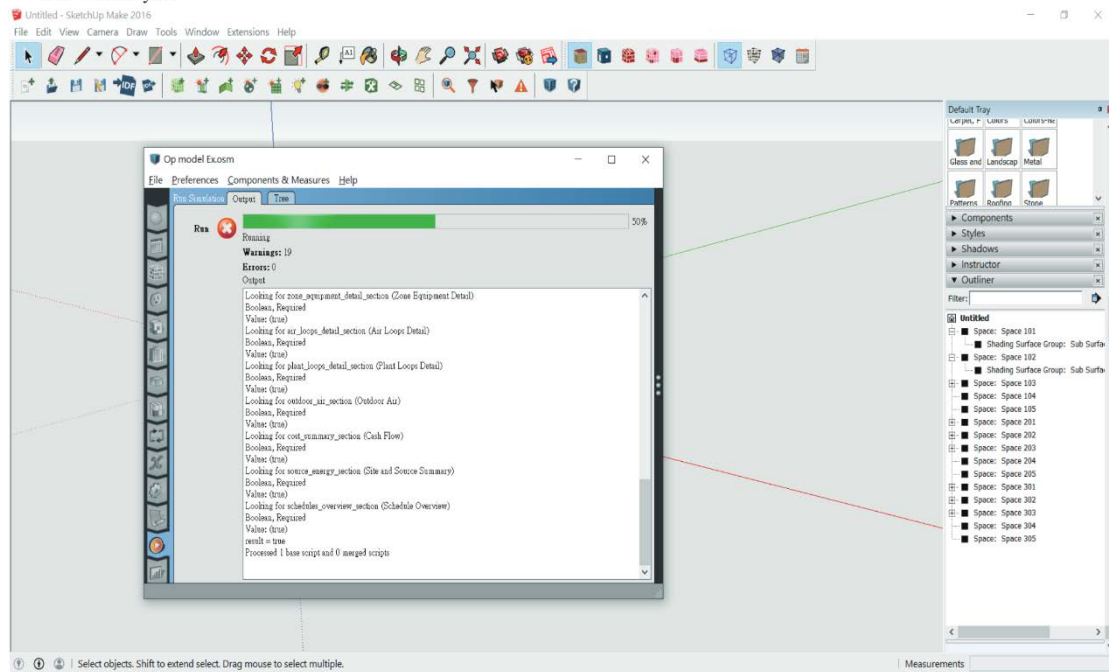
create a pdf file with screenshots of all of the steps we went through in the second lesson on OpenStudio and explain briefly the reason behind the use of each step (in your own words!).

ANSWER 2:

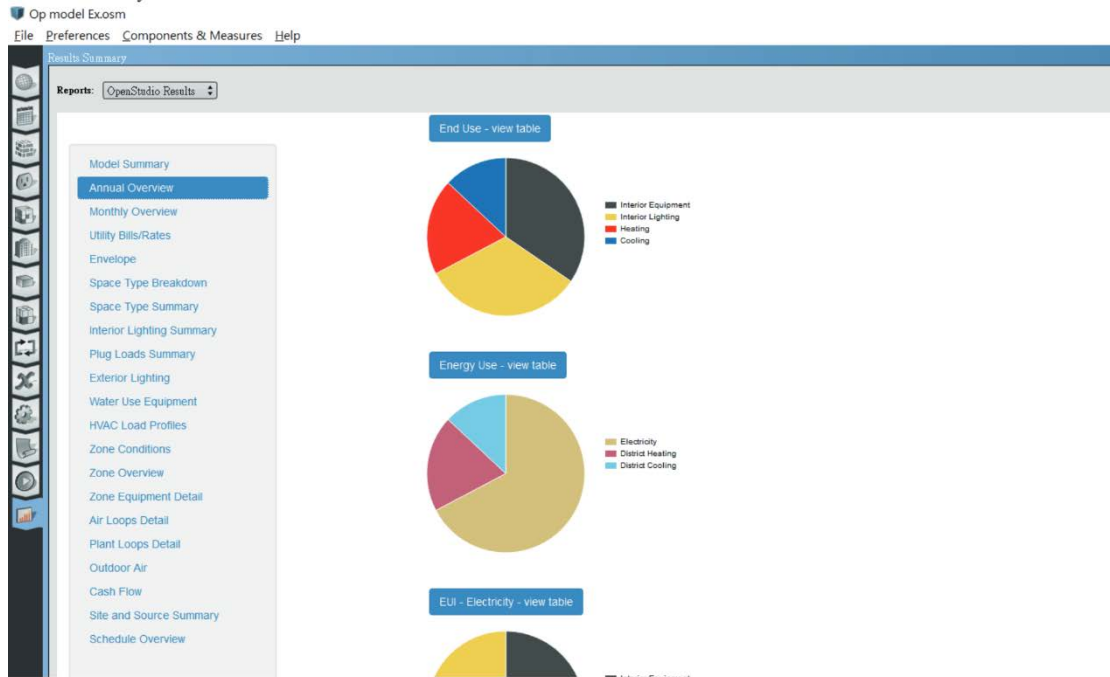
Adding weather data.



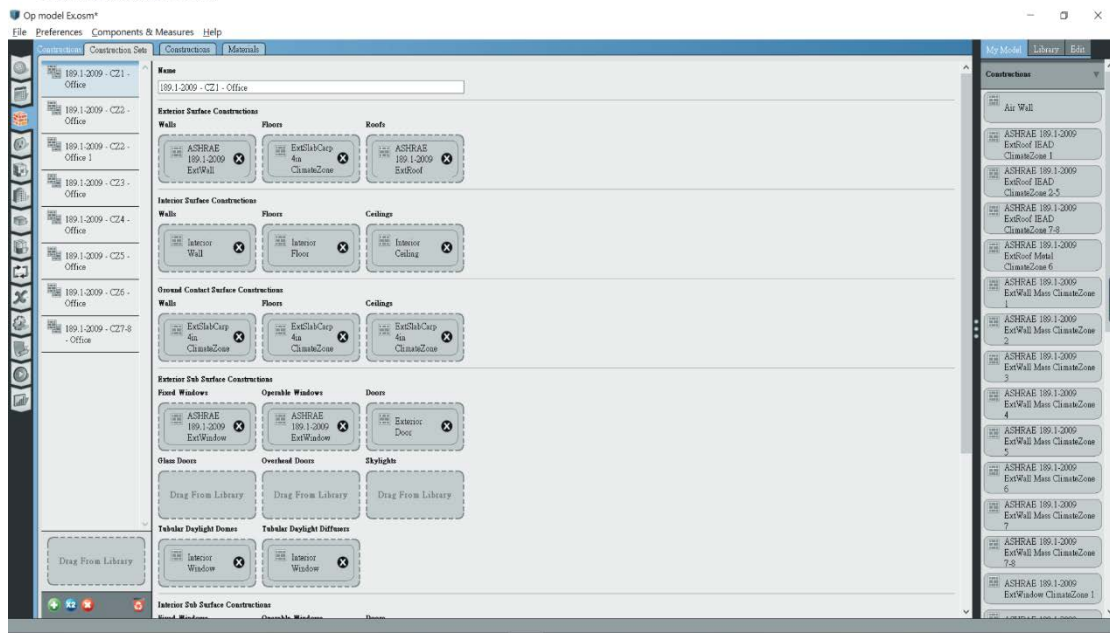
Run the analysis



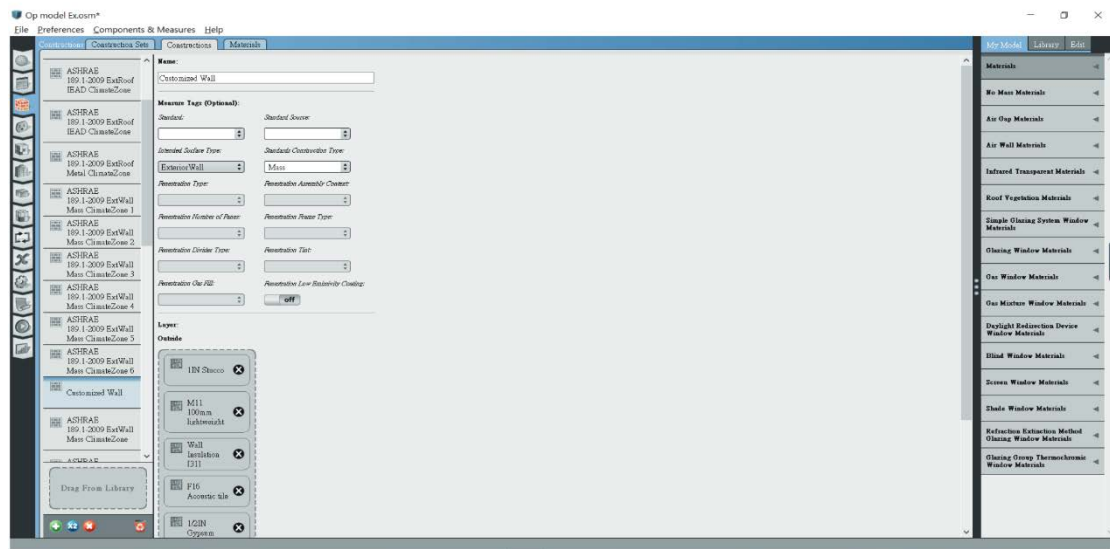
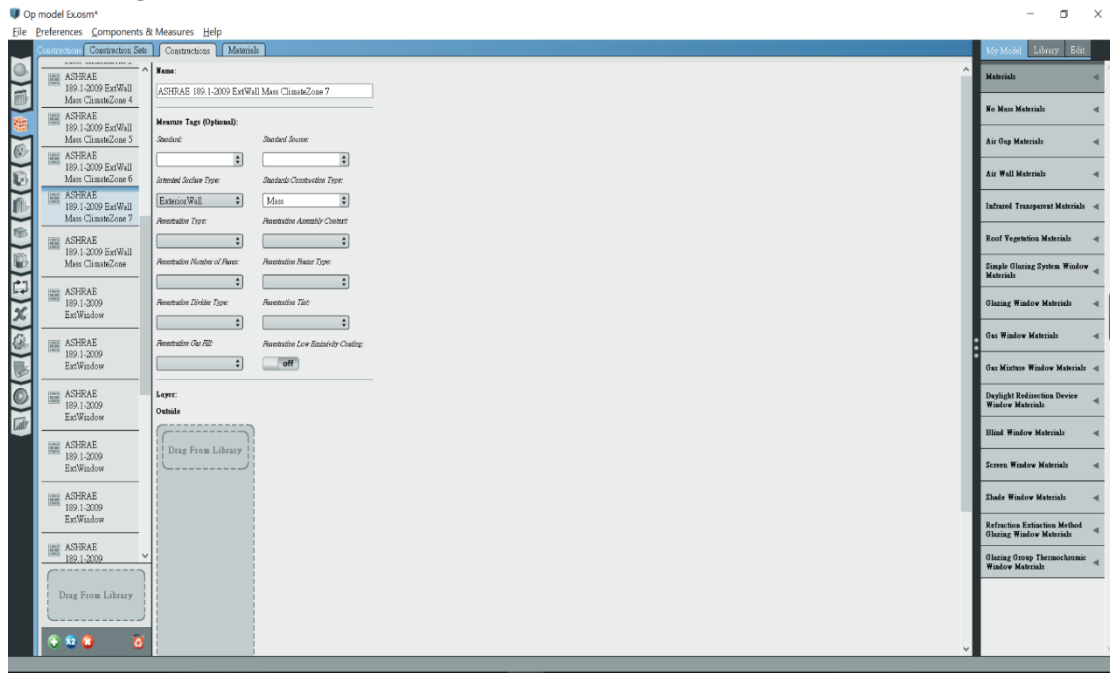
Shown analysis



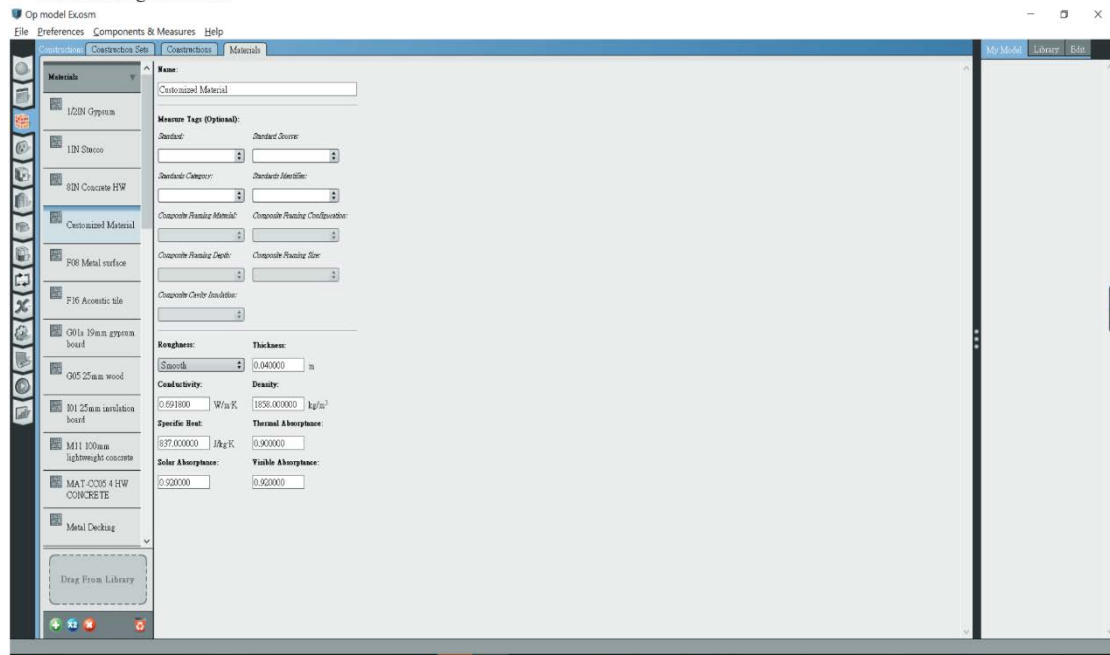
The construction sets



Customizing the walls



Customizing materials



Applying the customized walls to construction

