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Question：

Task 1: you should complete the modified example of simplified wall calculations that you went through in the assignment of week 3 and find the total heat transfer through wall

	Wood	Insulation
Outside Air	0.03	0.03
Wood Bevel(13mm*200mm)	0.14	0.14
Polywood(13mm)	0.11	0.11
Urethane Rigif Foam Ins(90mm)		0.98*90/25=3.528
Wood Studs(90mm)	0.63	
Gypsum Board(13mm)	0.079	0.079
Inside Surface	0.12	0.12

$$R'_{withwood} = 0.03 + 0.14 + 0.23 + 0.63 + 0.079 + 0.12 = 1.229 ㎡.℃/W$$
$$R'_{withins} = 0.03 + 0.14 + 0.11 + 3.528 + 0.079 + 0.12 = 4.007 ㎡.℃/W$$

$$U_{wood} = \frac{1}{R'_{withwood}} = 0.9 W/m^2℃$$
$$U_{ins} = \frac{1}{R'_{withins}} = 0.25 W/m^2℃$$

$$\frac{1}{R_{total}} = \frac{1}{R_{wood}} + \frac{1}{R_{ins}}$$

$$\frac{A_{total}}{R'_{total}} = \frac{A_{wood}}{R'_{wood}} + \frac{A_{ins}}{R'_{ins}}$$

$$A_{total}U_{total} = A_{wood}U_{wood} + A_{ins}U_{ins}$$

$$U_{total} = \frac{A_{wood}U_{wood} + A_{ins}U_{ins}}{A_{total}}$$

$$= 0.225 + 0.1875 = 0.4125 W/m^2.℃$$

$$R_{value} = \frac{1}{U_{total}} = 2.42 ㎡.℃/W$$

$$\dot{Q}_{total} = U_{total}A_{total}\triangle T$$

$$= 909.5 W$$

Task 2 In 2 pages you shoudl write a summary (in your own word!, in your own words !!) of what you have learnt in this session about radiation and radiative heat transfer

Radiation：

Radiation is a form of electromagnetic energy that spreads radiation from one source to the outside. It can spread out in the form of electromagnetic waves and particles, causing different degrees of influence on various objects.

Thermal radiation：

At the same time, it is a state in which heat radiation is generated. The object emits radiation to the outside in the form of electromagnetic waves due to heat. Generally speaking, as long as the electromagnetic

wave temperature is higher than absolute zero, a form of diffusion of thermal radiation is generated, and acts on other objects to form thermal energy.

Thermal radiation is one of the ways in which heat can be transmitted to other objects, and the wavelength of the electromagnetic waves can also be measured.

Since thermal radiation is an electromagnetic wave, the relationship between the heat of heat conduction and the wavelength frequency can be studied by studying the wavelength and frequency of electromagnetic waves in the study of electromagnetic waves. The formula for wavelength and frequency can be expressed by $c = \lambda f$. Generally, the longer the wavelength, the lower the frequency.

Blackbody radiation：

When studying thermal radiation, it will be left to the left without reference. Through the idealized model of the black body, it is possible to calculate how much heat the heat radiation can have under ideal conditions by the amount of radiation of the black body at a specific temperature. And can be used in the precise application of heat transfer.