Radiance Tutorial 2

IES Virtual Environment Version 6.4
1. Radiance Tutorial 2

This is an example of some office blocks which enclose a simple atrium space. The atrium is completely glazed. In total there are 18 zones - blocks A, B, C, D, E at 3 levels, the atrium, a pitched roof on top of the atrium and a base which is not shown in the image.
The atrium zone is as shown:

The pitched roof is as shown:
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On entering the “Radiance Application View” and clicking the “Simulate” button in the “Images” tab, a view will automatically be generated from outside the model looking towards the centre of the model.

This view generates very quickly and is as shown (below left), this view is overexposed and a better view is obtained by reducing the exposure to -1 as shown on the right.

This view is relatively far away from the buildings because of the size of the base plane. The image size is also small at 400 pixels. Default sky conditions and other parameters have also been applied.
A better image can be obtained by moving the “Eye position” nearer to the buildings, this can be achieved by double clicking the right mouse button and selecting the "Set Eye Position" option, the eye position is updated (X and Y only in Plan, the Z value is changed manually).

Alternatively the required co-ordinates can be typed into the X, Y, Z fields. The size of the picture is increased to 640, the aspect ratio of the image is determined by the horizontal and vertical angles of view (80°and 60°).
We can now change the surface colours and add textures (patterns) to the surfaces. An image with better resolution and accuracy can also be generated. This image will take longer to simulate.
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We can move our eye position anywhere around the model, for example to create a view inside the atrium.

![Eye view position](image)

![Focus view position](image)

![View parameters](image)
Switching the horizontal and vertical angles gives the following picture (same eye and focus positions), which has an aspect ratio of (11:16).

The size of the picture is determined as follows – the maximum dimension is taken from the given picture size (640 in this example), the other dimension is calculated from the ratio of the tangents of half the two angles (30 & 40) – this gives a width of 440 for this picture.
We can move our eye position inside one of the offices (block E on the 2nd floor) this gives us the following default view of this zone (the horizontal angle has been increased to 100 degrees to give a wider angle view).

![View Parameters](image)

From the “Analysis” menu we can display the glare sources.
From the “Analysis” menu we can also pop-up the window showing the glare indices.

![Glare indices summary](image)

From the “Analysis” menu we can also select the “Analyse Again” option; this pops-up the following window.

![Prepare for glare analysis](image)

This allows the user to redefine the parameters used to perform the glare analysis, e.g. change the glare threshold (this is not recommended for novice users). A “Threshold” value of 0 means that the value is calculated by the findglare program.
We can generate an illuminance image inside this zone by changing the image type.

Lux values can be generated at any point by clicking the left mouse button (right button will cancel the nearest point). This selection of points can be saved and applied to another image with the same view under different conditions, e.g. CIE overcast sky, different date or time.

We can create struts for the roof of the atrium, which we save in a separate model (obs.mit).

We attach to the atrium model using the “File” > “Attach Obstructions File” option in ModellT.
We can use this model in Radiance to generate more complex images.
Same view, different time (11th August 14:00pm) with texture added to the building façade.