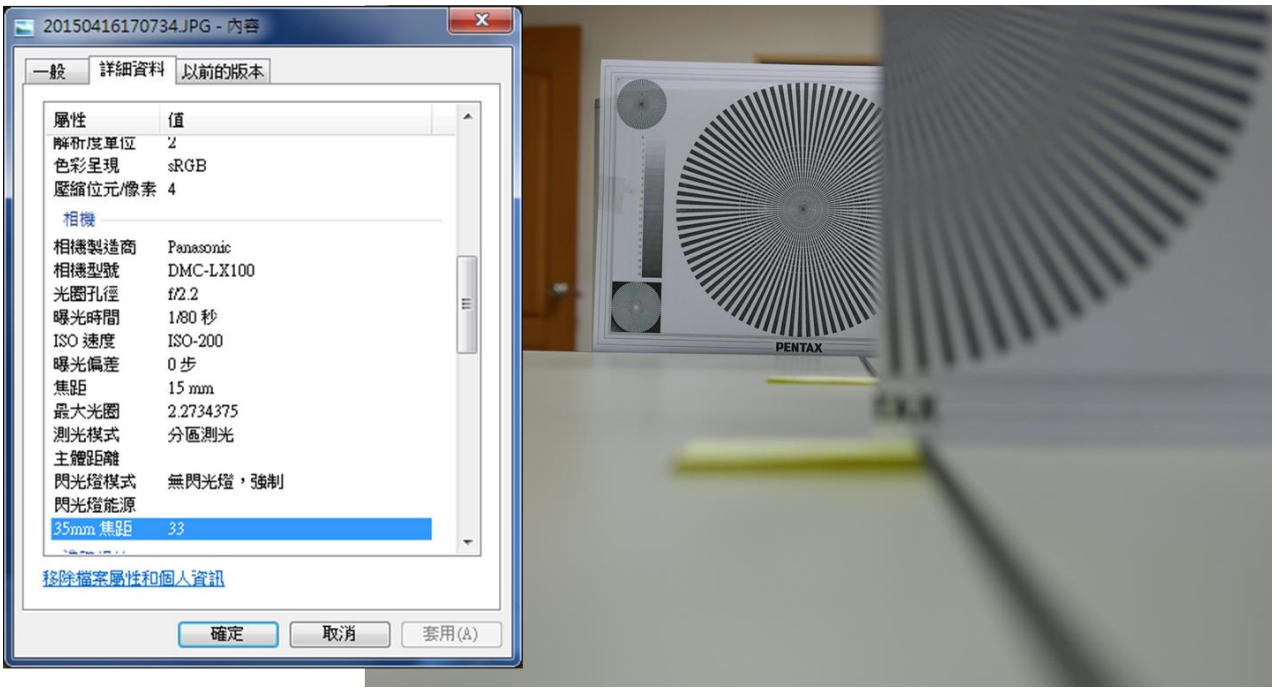
CSC0049 Advanced Computer Graphics
Assignment 3

DUE: October 29, 2024
(-10% for each day late)



Assume that we have an image such as the above. We know it is taken with these camera parameters:

- Camera focal length is 15 mm (equivalent to 33 mm in 35mm SLR cameras).
- CMOS sensor: 4/3 inch format
- Aperture: f/2.2 (i.e. 15 mm/2.2)
- Distance: front paper at 20cm, back paper (in focus) at 60 cm

Can you modify your assignment 2 to a **distributed ray tracer** and produce an image with the depth of field effects that match a real-world camera? Your task is to use the above example as a reference and derive the necessary parameters to match the scene data (such as the aperture size and the object distances) of your distributed ray tracer. A scene with 3 balls that are placed at distances of 20 cm, 40 cm, and 60 cm may be found at `hw3_input.txt`.

Please also include a brief report that contains:

- At least two output images (one showing the back object in focus, and the other showing the front object in focus)
- A short explanation on how you distributed the samples to produce those output images.

Please submit your code **and your report** on Moodle.