Python Workshop – Exercises Session 2

1. Start a new script and import the relevant packages.

2. Read in the file *optical.txt*.
    a. What dimensions does the table have?
    b. Convert all fluxes (columns with u,g,r,i,z, not the errors) to AB magnitudes and store them in separate variables.
       m_{AB} = -2.5*$\log_{10}$(flux_in_mJy*1e-26)-48.6
    c. Create variables (*z_flux*, *z_err* etc.) for all columns.
    d. Assemble all the flux columns as a dictionary with the key names being the filter names (i.e. flux_u, flux_u_err etc.).
    e. Which galaxy has a z flux of 0.0937952 mJy? (print on screen)
    f. Which galaxies have negative declinations? (print on screen)
    g. Which galaxy is the closest to us? (i.e. min redshift) (print on screen)
    h. What is the mean and median apparent magnitude (not flux) of each band in the sample? (print on screen)
    i. Which galaxies have negative declination (dec < 0) and a redshift smaller than 0.5? (print on screen)
    j. Assume, that the error on the u-band flux is a Poisson error. What is the mean ratio between the Poisson estimated error (square root of the flux) and the tabulated u-band error?
    k. Solve the following problem: Compute the overall mean flux error off all galaxies and all bands (*mean_err_sample*). Iterate over all galaxies and print the i band flux error for each galaxy (*mean_err_gal_i*). If the i band error of a galaxy *mean_err_gal_i* is smaller than *mean_err_sample*, then set it to the value of *mean_err_sample*.