

Python Workshop – Exercises Session 3

3. Read in the file *near_IR.fits*. This file lists additional near-IR photometry for the galaxies in the file *optical.txt*, but the sources are not listed in the same order.
 - a. Append the dictionary you created earlier so that it has the columns:
name, ra, dec, redshift, flux_u, u_err, flux_g, g_err, flux_r, r_err, flux_i, i_err, flux_z, z_err, flux_Y, Y_err, flux_J, J_err, flux_H, H_err, flux_K, K_err
 - b. Find the galaxy which has a u-band flux greater than 0.01 mJy but no detection in the Y-band. (print on screen)

4. Read in the W1 images (the file names tell you which galaxy the image shows).
 - a. Find the maximum pixel value (*x_cen*, *y_cen*).
 - b. Find the sum of pixel values in a 11 pixel times 11 pixel box, centered on (*x_cen*, *y_cen*) and multiply that sum by $1.93e-3$. Add to the dictionary with key name W1. Take $\sqrt{W1}$ as W1_err and add to the dictionary.
 - c. Repeat 4a and 4b for the W2, W3 and W4 images and multiply the W2 values by $2.7e-3$, the W3 values by $2.9e-3$ and the W4 values by $5.2e-3$, respectively. This converts the flux units to mJy. Add the values to the dictionary. Note that the W images are not in the same galaxy order as your dictionary probably is. Make sure to append correctly.
 - d. Convert the dictionary to a Table (be careful with the order of the keys in the dictionary) and write the Table to a text file.