Homework 1

a) Select galaxies and quasars with redshifts between 0.05 and 0.3 and signal-to-noise ratios greater than 35 near the Hβ line. Ensure that lines [O III] λ5007, Hβ λ4863, and Hγ λ4341 are present in emission and that the FWHM of Hβ is greater than 1000 km/s. For each selected spectrum, find the flux ratios of [O III]/Hβ, Hβ/Hγ, and [O III]/Hγ, as well as the equivalent width and flux of Hβ, redshift, and extinction correction: E(B-V) of type SFD (tip: the last one find in galSpecInfo table).

b) How many objects have you found? Which one from the conditions in WHERE is narrowing the results most severely? *(TIP: one needs to play with this for a while...)*

c) Find out if there is some of the Subclass AGN objects, with the same conditions under a). Adopt your code to get result.

d) Modify your solution under a) to include objects with redshift between 0.05 and 0.6. Using this modified solution and the list of objects (287-plate-mjd-fiber.txt) submit the SQL query via CrossID. *(TIP: you will need to alter the SQL code prepared under a) to fit requirements of CrossID. Follow the comments you get and be patient)*

e) Check the spectra of found objects, download some of them using wget.

f) BONUS: read downloaded fits files and plot the spectra using Python.

For your report include SQL code and outputs you got from SDSS server. Please submit your report by March 26th 2023, 23:59.