CTA200H Final Project

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Question 1

The first question asks us to write a function that takes the name of a star and returns a galpy.Orbit object. To do so, we must first retrieve data about the star's position and velocity from the *Gaia* DR2 catalogue. However, *Gaia* does not store the names of stars. Thus, each star name must first be correlated with a position (in right ascension and declination) in order to query the *Gaia* catalogue.

My function first queries the SIMBAD catalogue for the star's name, retrieving a table containing the right ascension, declination, parallax, proper motion, and radial velocity (if available) for that star. This data is used in the `EPOCH_PROP_POS` function built into the *Gaia* Archive ADQL query tool. The function returns the right ascension and declination of the star propagated from a reference epoch to a later time. The *Gaia* catalogue is then queried in a 1 arcsecond radius around these propagated coordinates, which returns the data for the desired star in a table.