Submission requirements:
By the due date/time, each individual will upload a zip file (filename = Lastname.zip) containing the following:
- your well-commented python code (filename = LastnameOD.py),
- an input file (filename = LastnameInput.txt),
- any other necessary codes (functions.py, etc.),
- and a README file (filename = Lastname.README) with any special run-time instructions for the TAs.
- When submitting, include a comment describing how well your code runs.

Values of constants to use in your code:
```
k = 0.0172020989484 #Gaussian gravitational constant
cAU = 173.144643267 #speed of light in au/(mean solar)day
eps = math.radians(23.4374) #Earth's obliquity
```

Required input:
A single input file containing one line for every usable night with the following info:
- UT date/time at middle of observation (JD),
- RA (hh:mm:ss.ss), Dec (dd:mm:ss.s), and
- Sun vector from JPL Horizons (AU, equatorial cartesian, J2000, apparent states)

Required functionality:
- If more than 3 observations are available, the code must ask which 3 the user wants
- If more than one positive real root exists for the scalar equation of Lagrange, the code must ask which the user wants to use.

Required output:
- asteroid's position and velocity vectors for the central observation in ecliptic rectangular coordinates, in AU and AU/day
- the range to the asteroid for the central observation, in AU
- the 6 orbital elements, all angles in degrees with respect to the ecliptic, report Mean anomaly for the date July 24, 2021 7:00 UT.

Additional functionality/output:
After determining your final orbit, run Monte Carlo and report mean, SDOM, and % error (w/r.t. JPL HORIZONS) values for all 6 orbital elements.

Optional functionality/output:
There are lots of bells and whistles you could add-on:
- After determining your preliminary orbit, use *all* the data points for a differential correction.
- Compare results from MoG with Method of Lagrange (MoL) - see OD packet appendix.
- Vpython visualization of inner solar system w/ your asteroid