```
(base) Carls-MacBook-Pro-2:Homework4 carlingebretsen$  cd /Users/carlingebretsen/400B_2023_Ingebretsen/Homeworks/Homework4 ; /usr/bin/env
/usr/local/bin/python3 /Users/carlingebretsen/.vscode/extensions/ms-python.python-2022.20.2/pythonFiles/lib/python/debugpy/adapter/../../d
ebugpy/launcher 53581 -- /Users/carlingebretsen/400B_2023_Ingebretsen/Homeworks/Homework4/CenterOfMass.py
The Milky Way Center of Mass Position is:
[-0.87  2.39 -1.42] kpc
The Milky Way Center of Mass Velocity is:
[-0.47  3.41 -1.33] km / s
The M31 Center of Mass Position is:
[-377.66  611.43 -284.64] kpc
The M31 Center of Mass Velocity is:
[ 72.85 -72.14  49.  ] km / s
The M33 Center of Mass Position is:
[-476.22  491.44 -412.4 ] kpc
The M33 Center of Mass Velocity is:
[ 44.42 101.78 142.23] km / s
The separation of MW and M31 is:  770.139 kpc
The separation velocit of MW and M31 is:  116.691 km / s
The separation of M33 and M31 is:  201.083 kpc
The separation velocit of M33 and M31 is:  199.37 km / s
When the Milkyway and M31 merge many stars will be sent off
        in large tidal streams far away from the rest of the galaxy. These stars will be
            outliers when trying to caculate the center of mass and should not really be
                counted. Thus we iteratively use closer and closer stars to the COM.
```