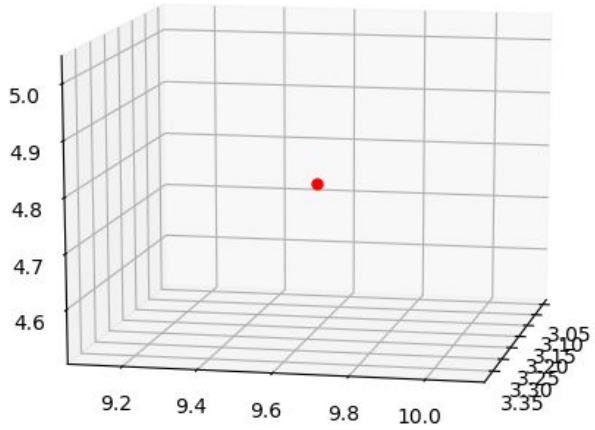
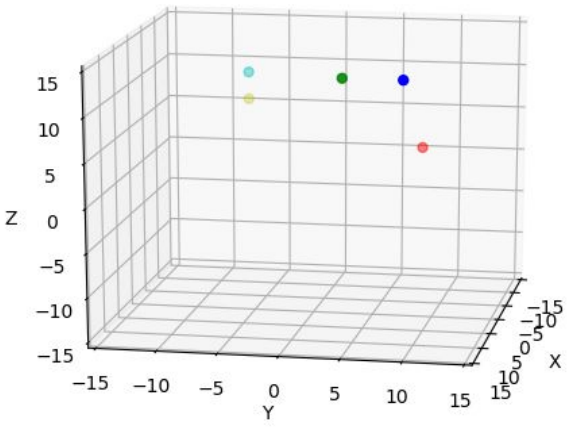
Robotics Programming assignment #1

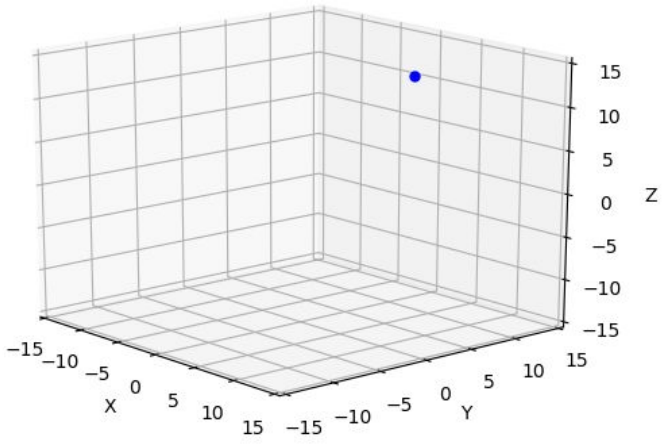
The objective of this assignment is to visualize rotations and transformations on points, and show that performing sequential transformations is equivalent to transforming the point with the matrix created by combining all the transformations.

I've generated a random point with coordinates (3.2, 9.6, 4.7). This is a visualization of the point in 3D space.



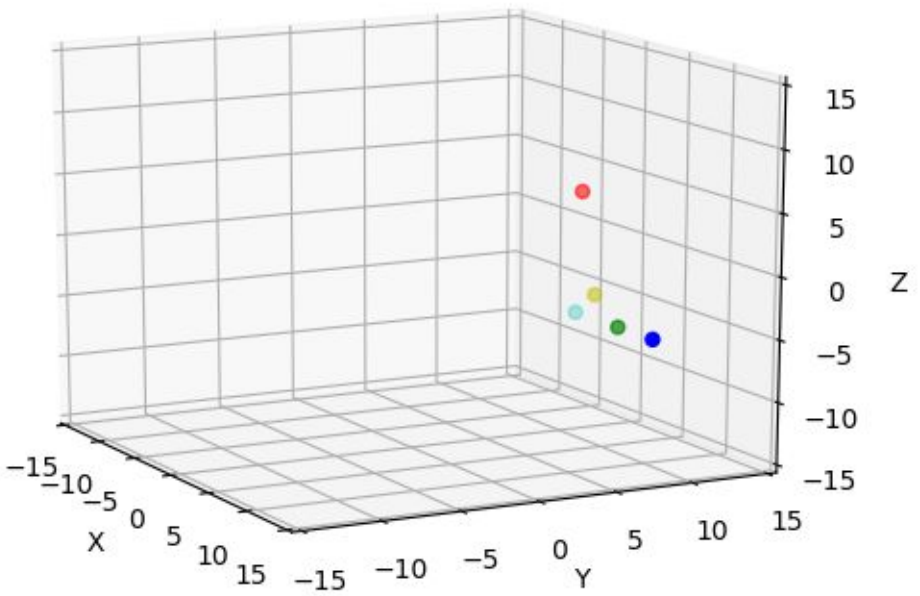
Now let's perform the transformations in sequential and plot the new point after each transformation. The points colors change in the following order: (Red, Yellow, Cyan, Green, Blue). Let's take a look at where our points are located at after each transformation.

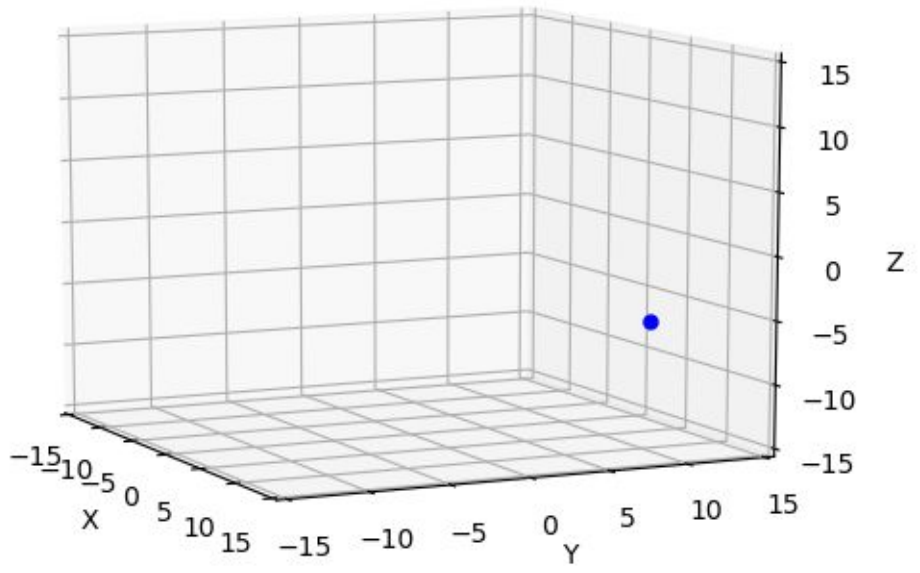




The single point above represents the final point calculated using the equivalent transformation matrix. It can be seen that both points are equivalent.

Now let’s see the results for the second example:





Two rotations followed by two transformations, and the final point computed using the equivalent transformation matrix.

Complete implementation of the code is at the github repository i created for the robotics course exercises at : https://github.com/Mohammadhp/Robotics-Homework