Assignment 1 - Question 6

Dataset 1:

- Projection Matrix corresponding to Dataset1: (without noise)

-0.2914	-0.0510	0.1891	0.6344
0.0882	-0.3240	0.0935	0.5940
-0.0002	-0.0002	-0.0001	0.0021

Frobenius Norm of the different between the estimated image points and the actual: 1.2952e-10 (written the code for the same)

- Projection Matrix corresponding to Dataset1: (with noise)

-0.2905	-0.0532	0.1866	0.6283
0.0881	-0.3264	0.0881	0.6010
-0.0002	-0.0002	-0.0002	0.0021

Frobenius Norm of the different betweent the estimated image points and the actual: 69.3450

Frobenius norm of the difference has increased because it is difficult to come with a matrix for perturbed data, the data can not be assumed to have been come up with a pinhole camera perfectly because of the presence of noise.

Dataset 2:

- Projection Matrix corresponding to Dataset2: (without noise)

-0.0087	-0.0011	0.0039	-0.9986
-0.0001	-0.0092	-0.0005	0.0520
-0.0000	-0.0000	-0.0000	-0.0027

Frobenius Norm of the different betweent the estimated image points and the actual: 21.2093

- Projection Matrix corresponding to Dataset1: (with noise)

0.0026	-0.0003	-0.0038	0.9757
-0.0013	0.0047	-0.0010	0.2190
-0.0000	-0.0000	-0.0000	0.0024

Frobenius Norm of the different betweent the estimated image points and the actual: 1.1468e+03

The same reason holds for this too. Here the no. of points are large hence the frobenius norms are higher and absolute value of standard deviation is high too.