HACETTEPE UNIVERSITY

DEPARTMENT OF GEOMATICS ENGINEERING

GMT225

REFERENCE COORDINATE SYSTEMS

Assignment #2

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1. INTRODUCTION

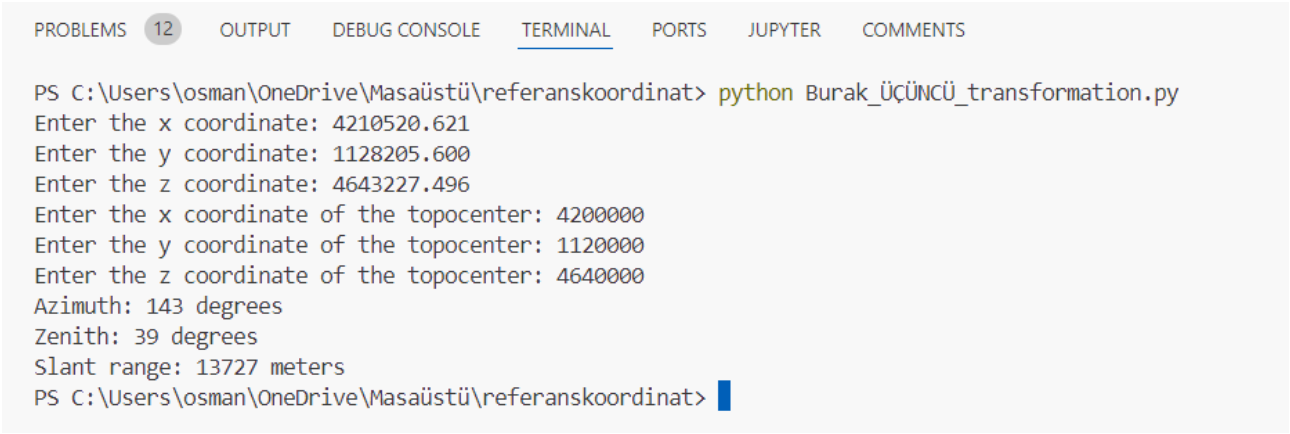
Our purpose in writing this code is to see the location of the coordinates we entered in the local system according to the local coordinate system whose center we determined ourselves, according to the X, Y and Z coordinates we entered in the global coordinate system (GRS80).

2. METHODOLOGY

First, I wrote the lines of code that input the X, Y and Z in the global coordinate system and then the topocenter coordinates of the local system. Then, using the conversion function I wrote in the 3rd homework, I converted it from Cartesian to GRS80 ellipsoid and with the latitude and longitude I obtained from there, I wrote the auxiliary matrix for the transformation from global to local coordinate system. Finally, I wrote the lines of code that converted the X, Y and Z coordinates I had to polar coordinates. While writing those lines, I calculated the norm with the np.linalg.norm function in the numpy library and wrote the lines that calculated the azimuth and zenith angles.

3. RESULTS AND DISCUSSIONS

As a result, when I ran the function, I got the result below.



4. ATTACHMENTS

Functions:

conversion(x_coord, y_coord, z_coord):

transformation_glbtolcl(x_coord, y_coord, z_coord, x_coord_north, y_coord_east, z_coord_up):