



HACETTEPE UNIVERSITY
DEPARTMENT OF GEOMATICS ENGINEERING

GMT225
REFERENCE COORDINATE SYSTEMS

Assignment #2

Submission Date: 04/12/2024

Name Surname: Burak ÜÇÜNCÜ

Student ID: 2220674009

burak.ucuncu@hacettepe.edu.tr

Fall
2024/25

1. INTRODUCTION


In this code, our first goal is to convert the given Cartesian coordinates to the ellipse coordinate system and find their new positions.

2. METHODOLOGY

While writing this code, I first imported the numpy library. Then I wrote the code to enter the X, Y, Z coordinates of the point as float, and I wrote the code that will enter the input value that will select which ellipse conversion (GRS80 ellipsoid, WGS84 ellipsoid, PZ-90.02 ellipsoid). Lastly, I wrote the conversion function. While writing this function, I defined the transformation equations. I defined a while loop inside the function for iteration and while printing, I rounded the incomplete values to the exact value with the help of round functions.

3. RESULTS AND DISCUSSIONS

As a result, when I ran the function, the example in the homework instructions also gave the correct result.



The screenshot shows a Jupyter Notebook interface with a terminal window. The terminal has tabs for PROBLEMS (1), OUTPUT, DEBUG CONSOLE, TERMINAL (selected), PORTS, JUPYTER, and COMMENTS. The terminal output shows the execution of a Python script named Burak_ÜÇÜNCÜ_conversion.py. The user is prompted to enter x, y, and z coordinates, and then to select a conversion method (GRS80, WGS84, or PZ-90.02). The script outputs the converted coordinates: latitude = 47, longitude = 15, height = 2000.

```
PS C:\Users\osman\OneDrive\Masaüstü\referanskoordinat> python Burak_ÜÇÜNCÜ_conversion.py
Enter the x coordinate: 4210520.621
Enter the y coordinate: 1128205.600
Enter the z coordinate: 4643227.496
Which conversion do you want? GRS80 = 1, WGS84 = 2, PZ-90.02 = 3: 1
The converted coordinates are: latitude = 47, longitude = 15, height = 2000
PS C:\Users\osman\OneDrive\Masaüstü\referanskoordinat>
```

4. ATTACHMENTS

Functions:

conversion():