1. Create a matrix with 2 rows and 3 columns and fill it with random numerical data.
2. Identify the data type of the matrix and calculate the mean, mode and median of the data.
3. Perform basic matrix operations (addition, subtraction, transpose and scalar multiplication) on the matrix.
4. Research and find a real-world application of matrices in data analysis and explain how it is used.
5. Compare your results with the provided solutions and explain any discrepancies.

1, [2 8 9]

[4 7 6]

2a, Numerical Data Type

2b, 2,8,9,4,7,6

Mean:2+8+9+4+7+6 = 6…….. 6 is the mean.

6

Median:2,4,6,7,8,9= 6+7 = 6.dade.6.5 is the median

2

Mode: Not applicable

3, A B

[2 8 9] [3 5 7]

[4 7 6] [6 2 9]

A+B= [5 13 16]

[10 9 15]

A-B= [-1 3 2]

[-2 5 -3]

T of A= [2 8]

[4 7]

[9 6]

Scalar multiplication= [2 8 9] \*3= [6 24 27]

[4 7 6] [12 21 18]

4, One real-world application of matrices in data analysis is in the field of image processing. When images are represented digitally, they are essentially a grid of pixels, and this grid can be represented as a matrix. Matrices are used to perform various operations on these images, such as scaling, rotation, and filtering.

For example, in the field of medical imaging, matrices are used to process and analyze MRI or CT scan images. Matrices are used to perform tasks such as noise reduction, image enhancement, and feature extraction. In image recognition and computer vision, matrices are used to perform operations such as edge detection and pattern recognition.

In a more general sense, matrices are used in data analysis to represent and manipulate multidimensional data sets. They are used in statistical analysis, machine learning, and other data-driven applications to perform tasks such as dimensionality reduction, clustering, and regression analysis.

Overall, matrices play a crucial role in data analysis by providing a mathematical framework for representing and manipulating complex data structures, making them an essential tool in various real-world applications.