**Name: Cristine Joy V. Plaida**

**Report: Matrix Notation and Summation**

**Introduction**

Matrices are very useful in mathematics and in many real-life situations. A matrix is like a table made of rows and columns where we put numbers in an organized way. Using matrices, we can do many operations such as addition, subtraction, multiplication, and summation.

In this report, we will talk about **matrix summation**, which is the process of adding two or more matrices. In matrix summation, we add the numbers in the same position of each matrix. This is called **element-wise addition**. To explain this better, we will use a simple example with sales data of two stores.

**Sample Data**

Let us say we have two small stores, Store A and Store B. Each matrix will show the sales of the stores for 3 days in 3 different product categories (snacks, drinks, and fruits).

**Matrix A (Store A Sales)**

= [[20, 35, 40], [25, 30, 20], [15, 25, 30]]

**Matrix B (Store B Sales)**

= [[15, 20, 25], [30, 35, 25], [20, 30, 35]]

* Row 1 = Day 1 sales
* Row 2 = Day 2 sales
* Row 3 = Day 3 sales
* Columns = Snacks, Drinks, Fruits

**Matrix Summation**

Now, let us add the two matrices A and B.

**C = A + B**

**Matrix C (Total Sales of Both Stores)**

= [[35, 55, 65], [55, 65, 45], [35, 55, 65]]

**Explanation of the Result**

1. **Element-wise Addition**  
   Each element of matrix C is obtained by adding the same position numbers in A and B.  
   Example: For Day 1, Snacks → 20 (Store A) + 15 (Store B) = 35.
2. **In Context**  
   If A represents sales of Store A and B represents sales of Store B, then C shows the total sales from both stores together for each day and each product.
3. **Usefulness**  
   This process is very useful when combining data. For example, business owners can use this to know the total sales from different branches. Teachers can use this idea when adding scores from two exams. Scientists can also use matrices to add data like rainfall, temperature, or other measurements.

**Additional Observation**

Looking at matrix C, we notice that the numbers are higher because they show combined sales. This makes it easier to compare which day or which product had the most sales. For example, drinks on Day 2 had 65 total sales, which is higher than other values, meaning drinks sold very well on that day.

**Conclusion**

Matrix summation is simple but very powerful. By adding two matrices, we can combine information and make it easier to understand the results. In our example, we combined the sales of two stores. This gave us the total sales for each product across all days.