Solution Review: Multiply Two Matrices

Let's go over the solution review of the challenge given in the previous lesson.

We'll cover the following

- Solution
- Explanation
  - multiplication function

Solution

Press the **RUN** button and see the output!

```
#include <iostream>

using namespace std;

// multiplication function
void multiplication(int arr1[][2], int row1, int col1, int arr2[][2], int ro
  // Check if col of first array equal to row of second array
  if (col1 == row2) {
    // Traverse first array row
    for (int x = 0; x < row1; x++) {
      // Traverse second array columns
      for (int y = 0; y < col2; y++) {
        // Traverse first array columns and second array rows
        for (int z = 0; z < col1; z++) {
          // Multiplication
          result[x][y] = result[x][y] + arr1[x][z] * arr2[z][y];
        }
      }
    }
  }
```

```
21    else{
22    // Traverse first array row
23      for (int x = 0; x < row1; x++) {
24        // Traverse second array columns
25        for (int y = 0; y < col2; y++) {
26          // Fill the elements of array by -1
27          result[x][y] = -1;
28        }
```


Output 0.97s

```
70 100
150 220
230 340
```

Explanation#

`multiplication` function#

The `multiplication` function takes three 2D arrays `arr[][]` of type `int` and its `row` and `column` of type `int` in its input parameters, and returns nothing in the output.

Matrix multiplication is only possible if the number of columns of the 1st matrix is equal to the number of rows of the 2nd matrix. We first check for this condition. If `col1` is not equal to `row2`, we fill each element of the matrix with `-1`. If matrices can be multiplied, traverse through the 2D array (matrix) using two nested loops. In matrix multiplication, each value at a certain [row][column] is computed by multiplying each element of the row index of the first matrix with its corresponding column index elements of the 2nd matrix. For this, we use a 3rd nested loop to iterate over each row element of the first array (equal to the number of columns in the first

element of the first array (equal to the number of columns in the first

matrix). We initialize `z` from `0` to `col1` and multiply the elements in each row of the first matrix to the element in each column of the second matrix and add their products.

Let’s wrap up this chapter by completing a quiz in the upcoming lesson.

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Challenge 5: Multiply Two Matrices

Quiz

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