**Ada Programming :**

The Ada program has two parts:

1. A package for performing concurrent matrix multiplication.

2. A main procedure, AssignmentMain, containing tasks for reading in matrix data, invoking the matrix multiplication, and displaying the results.

**Package for Concurrent Matrix Multiplication:**

**The MatrixMult Package Specification:** Defines a package called MatrixMult that exports (i.e. declares in its specification) the following:

* An integer constant SIZE define to be 10.
* A type that defines the type of a matrix, e.g. a two dimensional array of integers. The size of the array should be SIZExSIZE (i.e. a square matrix).
* A procedure MatMult(A,B,C), where A and B are input parameters of the matrix type defined, and C is an output parameter, also of the same matrix type.

**The MatrixMult Package Body:** Within the body of the MatrixMult package, we will define the MatMult procedure.

* This procedure should multiply the matrices A and B and write the result to C.
* Two-dimensional array of tasks, where each task computes one element of the result matrix C.

**The AssignmentMain Procedure**

The procedure AssignmentMain has three matrices of the type defined in the MatrixMult package, read in the values for the first two matrices, call MatMult so that the third matrix contains the results of multiplying the first two, and then print out the third matrix which uses below 3 tasks for doing that:

* Reader1: This task read in SIZE2 integers from the terminal and write them into the first matrix (in row major order -- i.e. going across the rows of the matrix).
* Reader2: This task also read SIZE2 integers from the terminal and populate the second matrix in row major order. Reader2 doesn't start reading until Reader1 has finished.
* Printer: This task print the third matrix after it has been computed using MatMult.
* The call to the MatMult procedure is from the body of the AssignmentMain procedure.

**To run the program:** Download all the 3 files in your local system and simply create an input file containing the 200 integers, separated by spaces. Then, when you run your program, redirect that file to the standard input by typing

./assignmentmain < input.txt

where the input file is called input.txt. The attached input.txt file has 200 integers to run this program. The output of your program for this input file should be:

6176 7286 6406 5358 9562 5972 8671 6089 5728 9108

4668 4819 4289 4838 5948 3677 5852 4109 5190 6052

5979 6333 5911 5554 7202 5188 6844 4932 5381 6333

6464 6629 6861 4698 7022 5642 6976 3787 5649 7137

4339 4917 4467 4928 5126 4777 7414 4229 5538 6542

3855 4845 4822 4171 4908 4482 6980 4014 5050 6493

6491 5835 5159 5300 7143 6014 8103 4480 5676 8752

4885 5314 5610 5608 7061 4967 8495 5887 4564 7556

5009 6278 5426 4930 7372 5342 7940 5344 5750 8158

7647 8076 7403 7262 8360 8431 12179 6902 8108 11189