CPS 5401 Fall 2015

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Lab 1
Due Thursday, September 17

C Programming Lab

Based on the C lectures, please write a program to perform the following tasks:

1. A program that reads data from an input file named matrices.in . This input file consists of dimensions for and matrix entries for two matrices A and B of arbitrary dimension and will be provided by the user.

2. Now, write a function to be called by the main program that :

- Takes matrices A and B and their dimensions as arguments, as well as an argument that indicates whether or not B should be transposed for purposes of multiplying and a pointer argument for a matrix C that will hold the result upon successful multiplication.
- Checks if the dimensions are suitable for multiplication and returns an error code BADDIM if not.
- If dimensions are OK, performs the multiplication and returns the code SUCCESS.

3. If the multiplication was successful, the main program should write the result matrix C to a file named matrix.out .

To perform the above tasks, you should use arrays, loops to perform array processing and if-statements in C. You should place your main program and your function in separate files and create a header file that contains your constant declarations and your function prototype. Please create a Makefile that expresses all dependencies and that will build your code correctly when the user types "make". You should also construct test input files and use them to test your program.

To turn in your lab, please create a directory in your SVN repository named

  lab1-<username>

where <username> is your username, and upload your program files, Makefile, and a sample test input and output.