MATLAB mex functions and creating/testing Arduino libraries

Due May 31 by 11:59pm **Points** 100 **Submitting** a file upload **File Types** pdf

For this assignment, you will use C++ software in Visual Studio to create an Arduino library. You will test the Arduino library by attaching MATLAB to Visual Studio with a mex function and Visual Studio tools. Note: The **vector** library in C++ is not compatible with Arduino. You will need to use basic C++ arrays as discussed in **C++ Crash Course 1**.

Your Assignment

Study the chapter ***Creating Custom Arduino Libraries*** in the textbook *AutonomousFlight.pdf*. You may also need to review the chapter ***Using C++ With MATLAB***.

1. Create an Arduino library that can multiply two matrices named MatrixMultiply.
2. Create a Matlab mex function to test the Arduino library. Save the Matlab code in a file named mexMatrixMultiply.m.
3. Write an Arduino sketch that includes the MatrixMultiply library. In the Arduino setup() function, use the MatrixMultiply library to multiply the following two matrices: $A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$
4. Print the result to the Serial Monitor

What to submit

1. Take a screenshot of the Serial Monitor showing the result of the matrix multiplication A*B. Paste it in a word document.
2. Copy and paste your Arduino sketch in the same word document.
3. Copy and paste your C++ code from the MatrixMultiply.cpp file into the same document.
4. Copy and paste your C++ code from the MatrixMultiply.h file into the same document.
5. Copy and paste your Matlab code from mexMatrixMultiply.m into the same document.
6. Save the document as a pdf file and submit it.