Ma2 Answer Sheet

Your Name:	Roshan Sundar, Ayush Viswanathan, Jackson Bitterolf, Nolan Hays	**Your login:**	
Your Section:	LC - 01	**Your Team number:**	04

Task 2: *Assigning Vectors & Performing Operations*

Part A: Complete the table below.

Mathematical Operation	MATLAB Answer/Response	Explanation of the Result
`Arowvector + Arowvector`	0 2 4 6	Matlab adds each individual component of Arowvector and Arowvector together.
`Arowvector + Browvector`	4 3 2 1	Matlab adds each individual component of Arowvector and Browvector together.
`Arowvector + Ascalar`	3 4 5 6	Matlab adds each individual component of Arowvector with Ascalar.
`Arowvector - Arowvector`	0 0 0 0	Matlab subtracts each individual component of Arowvector and Arowvector together.
`Arowvector - Crowvector`	Matrix dimensions must agree.	Arowvector is of length 4 while Crowvector is length 3.
`Acolvector + Bcolvector`	Matrix dimensions must agree.	Matlab adds each individual component of Acolvector and Bcolvector together.
`Arowvector + Bcolvector`	-4 -3 -2 -1 -3 -2 -1 0 -2 -1 0 1 -1 0 1 2	Matlab iterates over Arowvector and adds Bcolvector, turning the results into a column vector and concatenating it with the previous column vectors.

Part B: Complete the table below.

Mathematical Operation	MATLAB Answer/Response	Explanation of the Operation
`Arowvector * Browvector`	Error using *.	Matlab is trying to perform a matrix calculation as opposed to an element calculation. Arowvector and Browvector do not have the correct dimensions.
`Arowvector .* Browvector`	0 2 0 -6	Matlab multiplies each individual component of Arowvector and Browvector together.
`Arowvector * Ascalar`	0 3 6 9	Matlab multiplies each individual component of Arowvector with Ascalar.
`Arowvector .* Ascalar`	0 3 6 9	Matlab multiplies each individual component of Arowvector with Ascalar.
`Arowvector ./ Browvector`	0 0.5000 Inf -1.5000	Matlab divides each individual component of Arowvector and Browvector together.
`Arowvector ^ Ascalar`	Error using ^	The matrices should be square or the power should be a scalar.
`Arowvector .^ Ascalar`	0 1 8 27	Matlab takes each individual component of Arowvector to the power of Ascalar.

Task 3: *Compare Scalars & Vectors using Relational Operators*

Step 2.

	MATLAB Answer/Response	Explanation of the Operation

a.	1 1 1 1	Compares each corresponding element in both arrays. Returns 1 if the element in that position in Aarray is greater than or equal to the element in Barray
b.	0 1 1 1	First, matrix A and B are multiplied. A logical matrix is then returned where every element that is not 1 in the product matrix returns true(1) and every value that is 1 returns false(0)
c.	1 0 0 1	Returns a 2x2 logical matrix where for each element, 1 if the corresponding value of Aarray - the value at Answer_b is greater than the value at Barray and less than or equal to the logical matrix produced by Answer_b < 1 multiplied by 3.
d.	Matrix dimensions must agree.	Matrix Carray is a 3x2 and matrix Barray is a 2x2, so logical operators will not work without error.
e.	1 0 0 1 0 0	Adds Cvector to a new third row of matrix Barray making Barray a 3x2. Then, the new 3x2 matrix is compared to Carray. If the corresponding elements are equal a 1 is assigned for that element of the logical matrix, and if they are not equal a 0 is assigned

Step 3.

	MATLAB Answer/Response	Explanation of the Operation
a.	2 2	Takes the value of any(Aarray) and any(Barray) which is both 1 1 because no vector in the matrices is all nonzero numbers and adds them for a sum of 2 2
b.	1 0	The all function takes each vertical vector (column) in a matrix and returns a 1 for that column if all values are nonzero numbers. Therefore, all(Aarray) is equal to 1 1 and all(Barray) is equal to 1 0. Then, the two logical matrices are multiplied. ???? why no error 1x2 * 1x2
c.	0 1	First a 3x2 logical matrix is created by Carray > 1 then each column is analyzed to see if it has all nonzero numbers. If it does then that value in the logical array is 1, if it has any zeros the corresponding value in the logical array will be 0.
d.	1	
e.	1 64 4096	
f.	1 3	The find function returns the indices of any nonzero value. The logical matrix that results from any(Darray==1) is 1 0 1. Therefore, find(any(Darray==1)) returns 1 3 because the first and third values of any(Darray==1) are non zero