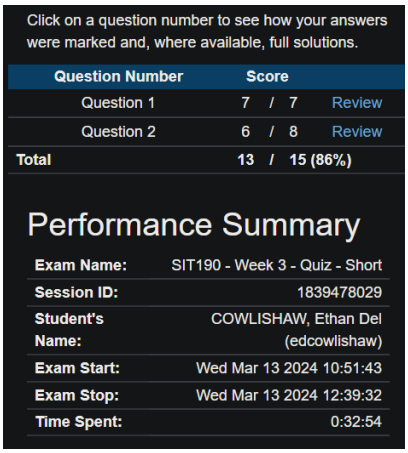
Task 1 - Give it a go

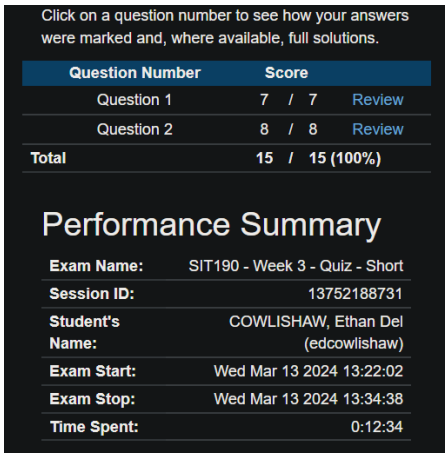


Click on a question number to see how your answers were marked and, where available, full solutions.

Question Number	Score	
Question 1	7 / 7	Review
Question 2	6 / 8	Review
Total	**13 / 15 (86%)**	

Performance Summary

Exam Name:	SIT190 - Week 3 - Quiz - Short
Session ID:	1839478029
Student's Name:	COWLISHAW, Ethan Del (edcowlishaw)
Exam Start:	Wed Mar 13 2024 10:51:43
Exam Stop:	Wed Mar 13 2024 12:39:32
Time Spent:	0:32:54



Click on a question number to see how your answers were marked and, where available, full solutions.

Question Number	Score	
Question 1	7 / 7	Review
Question 2	8 / 8	Review
Total	**15 / 15 (100%)**	

Performance Summary

Exam Name:	SIT190 - Week 3 - Quiz - Short
Session ID:	13752188731
Student's Name:	COWLISHAW, Ethan Del (edcowlishaw)
Exam Start:	Wed Mar 13 2024 13:22:02
Exam Stop:	Wed Mar 13 2024 13:34:38
Time Spent:	0:12:34

2a) I struggled understanding the domain questions until I asked for help. The other questions I took a fair amount of time to get through but I did understand them. The multiplication of matrices is confusing for me and that is where I got a question wrong.
b) I intend to study more intently on how matrices multiply and pay close attention to adding negatives. My notes are fairly comprehensive on how to multiply, I simply do not comprehend it at times.
c) It was the final question where I had to multiply two matrices together. I did it nearly correctly but forgot to account for negatives while adding all the multiplications per column.

Reflection
I improved on my mistake made on the first attempt of the give it a go quiz and correctly multiplied the matrix on the last question. This time I was significantly faster (improved by 20 minutes) too. I am starting to understand the domain/range questions better now too. My strategy therefore did work.

Task 2 - Matrices

$$A = \begin{bmatrix} 28 & 1 \\ 3 & \frac{1}{4} \end{bmatrix} \quad B = \begin{bmatrix} 3 & 0 \\ -6 & 0 \\ 2 & 7 \end{bmatrix} \quad C = \begin{bmatrix} 0 & 3 & -5 \\ 6 & 0 & 4 \end{bmatrix} \quad D = \begin{bmatrix} 3 & \frac{1}{4} & \frac{5}{2} \\ \frac{3}{6} & \frac{1}{2} & \frac{3}{4} \end{bmatrix} \quad E = \begin{bmatrix} 6 & 4 \\ -5 & 3 \end{bmatrix}$$

a) $A + D$
A is 2×2 whereas $D : 2 \times 3$, meaning they cannot be added or subtracted by each other. They would have to be identical in size to add.

b) $A + E$

$$\begin{bmatrix} 28 & 1 \\ 3 & \frac{1}{4} \end{bmatrix} + \begin{bmatrix} 6 & 4 \\ -5 & 3 \end{bmatrix} = \begin{bmatrix} 28+6 & 1+4 \\ 3+-5 & \frac{1}{4}+\frac{12}{4} \end{bmatrix} = \begin{bmatrix} 34 & 5 \\ -2 & \frac{13}{4} \end{bmatrix}$$

c) $B + D$
B is 3×2 which cannot be added/subtracted by a matrix with non-identical dimensions, such as D being 2×3

d) $A \times B$

A has dimensions of 2×2 and $B : 3 \times 2$.

For matrices to be multiplied, the columns of the first matrix must be identical to the rows of the first matrix. In this case, $A_{column}(2) \neq B_{row}(3)$.

e) $B \times A$

$$\begin{bmatrix} 3 & 0 \\ -6 & 0 \\ 2 & 7 \end{bmatrix} \times \begin{bmatrix} 28 & 1 \\ 3 & \frac{1}{4} \end{bmatrix} = \begin{bmatrix} 3(28) + 0(3) & 3(1) + 0(\frac{1}{4}) \\ -6(28) + 0(3) & -6(1) + 0(\frac{1}{4}) \\ 2(28) + 7(3) & 2(1) + 7(\frac{1}{4}) \end{bmatrix}$$

$$= \begin{bmatrix} 84 & 3 \\ -168 & -6 \\ 77 & \frac{15}{4} \end{bmatrix}$$

f) $C \times A$

$C : 2 \times 3$ whereas $A : 2 \times 2$. C's columns (3) do not match A's rows (2)

g) $12D$

$$12 \times \begin{bmatrix} 3 & \frac{1}{4} & \frac{5}{2} \\ \frac{1}{2} & \frac{1}{2} & \frac{3}{4} \end{bmatrix} = \begin{bmatrix} 36 & \frac{12}{4} & \frac{60}{2} \\ \frac{12}{2} & \frac{12}{2} & \frac{36}{4} \end{bmatrix} = \begin{bmatrix} 36 & 3 & 30 \\ 6 & 6 & 9 \end{bmatrix}$$

h) $C - 12D$

$$\begin{bmatrix} 0 & 3 & -5 \\ 6 & 0 & 4 \end{bmatrix} - \begin{bmatrix} 36 & 3 & 30 \\ 6 & 6 & 9 \end{bmatrix} = \begin{bmatrix} -36 & 0 & -35 \\ 0 & -6 & -5 \end{bmatrix}$$