DAILY ASSESSMENT FORMAT

Date:	**15-07-2020**	**Name:**	**BINDUSHRI**
Course:	**Mathematics for machine learning:linear algebra (coursera)**	**USN:**	**4AL17EC011**
Topic:	**Week-4**	**Semester & Section:**	**6th sem&Asec**
Github repository	**Bindushri**		

FORENOON SESSION DETAILS (9.00am to 1.00pm)

Non-square matrix multiplication
Practice Quiz • 20 min

Congratulations! You passed!
TO PASS 75% or higher

Keep Learning

GRADE
87.50%

Non-square matrix multiplication

TOTAL POINTS 8

1. In the previous lecture we saw the Einstein summation convention, in which we sum over any indices which are repeated. In traditional notation we might write, for example, $\sum_{j=1}^{3} A_{ij} v_j = A_{i1} v_1 + A_{i2} v_2 + A_{i3} v_3$. With the Einstein summation convention we can avoid the big sigma and write this as $A_{ij} v_j$. We know that we sum over j because it appears twice.

   1 / 1 point

   We saw that thinking about this type of notation helps us to multiply non-square matrices together. For example, consider the matrices

   $$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 0 & 1 \end{bmatrix} \text{ and } B = \begin{bmatrix} 1 & 1 & 0 \\ 0 & 1 & 1 \\ 1 & 0 & 1 \end{bmatrix},$$

   and remember that in the A_{ij} notation the first index i represents the row number and the second index j represents the column number. For example, $A_{12} = 2$.

   Let's define the matrix $C = AB$. Then in Einstein summation convention notation $C_{mn} = A_{mj} B_{jn}$.

   Using the Einstein summation convention, calculate $C_{21} = A_{2j} B_{j1}$.

Example: Using non-square matrices to do a projection
Practice Quiz • 30 min

Congratulations! You passed!
TO PASS 40% or higher

Keep Learning

GRADE
42.86%

Example: Using non-square matrices to do a projection

TOTAL POINTS 7

1. This quiz is a bit more tricky than the others. We've lowered the pass grade accordingly. Do read through the feedback after submission to build your understanding.

   1 / 1 point

   The quiz builds sequentially, so don't be afraid to submit and check your answers after tricky questions to make sure you're on the right track before moving on to later questions.

   * * *

   Shadows are an example of a transformation that reduces the number of dimensions. For example, 3D objects in the world cast shadows on surfaces that are 2D.

   We can consider an example for looking at shadows using linear algebra.

Week-4

Summation convention and eigenvalues of the matrix

$$\begin{pmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & & \\ \vdots & & & a_{nn} \\ a_{n1} & & & \end{pmatrix} \begin{pmatrix} b_{11} & b_{12} & \cdots & b_{1n} \\ \vdots & & & \\ b_{n1} & - & - & b_{nn} \end{pmatrix} = \begin{pmatrix} & & & \\ & & & \\ & & & \end{pmatrix}$$

A: row, column. B: $n \times n$

$(ab)_{23} = a_{21} b_{13} + a_{22} b_{23} + \cdots a_{2n} b_{n3}$

$ab_{ik} = \sum_j a_{ij} b_{jk} = a_{ij} b_{jk}$.

$AB = C$

$c_{ik} = a_{ij} b_{jk}$

$$2\begin{pmatrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{pmatrix}_{3} \quad 3\begin{pmatrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{pmatrix} = 2\begin{pmatrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{pmatrix}$$

$$\begin{pmatrix} u_i \end{pmatrix} \times \begin{pmatrix} v_i \end{pmatrix} \quad [u_1 \; u_2 \cdots u_n] \begin{bmatrix} v_1 \\ v_2 \\ \vdots \\ v_n \end{bmatrix}$$

$u_i v_i$

$C = [u_1 \; u_2]$

Non-Square Matrix Multiplic

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 0 & 1 \end{bmatrix} \quad B = \begin{bmatrix} 1 & 1 & 0 \\ 0 & 1 & 1 \\ 3 & 0 & 1 \end{bmatrix}$$

$$C = \begin{bmatrix} 1+0+3, & 1+2+0, & 0+2+3 \\ 4+0+1, & 4+0+0, & 0+0+1 \end{bmatrix}$$

$$\begin{bmatrix} 4, & 3, & 5 \\ 5, & 4, & 1 \end{bmatrix} //$$

① $\begin{bmatrix}2 & 4 & 5 & 6\end{bmatrix}\begin{bmatrix}1\\3\\2\\1\end{bmatrix}$

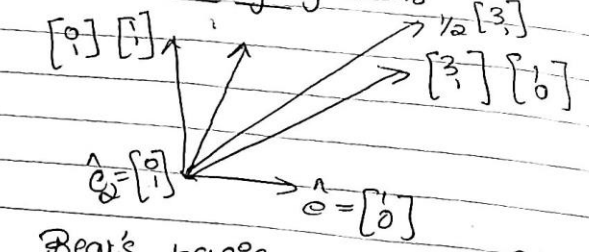
$2+12+10+6 \rightarrow 30$

② $\begin{bmatrix}2 & -1\\0 & 3\\1 & 0\end{bmatrix}\begin{bmatrix}0 & 1 & 4 & -1\\2 & 6 & 0 & 2\end{bmatrix}$

$2+2 \quad 2+0 \quad 4$

$\begin{bmatrix} & & & \\ & & & \\ & & & \end{bmatrix}\begin{bmatrix}1 & \\ 1 & \\ 1 & \end{bmatrix}$

Matrices changing basis



Bear's basis vectors $\begin{bmatrix}3\\1\end{bmatrix}, \begin{bmatrix}1\\1\end{bmatrix}$ in my frame

$$\begin{bmatrix}3 & 1\\1 & 1\end{bmatrix}\begin{bmatrix}3/2\\1/2\end{bmatrix} = \begin{bmatrix}5\\3\end{bmatrix}$$

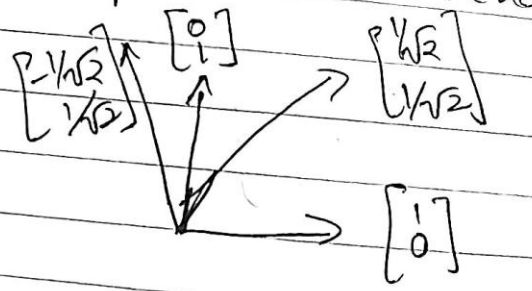
Bear's basis on my coord — Bear's vect — in my vector.

B

B^{-1}

$\frac{1}{2}\begin{bmatrix}1 & -1\\-1 & 3\end{bmatrix}$

Transformation in a changed basis.



Orthogonal Matrices.

$A^{-1}_{ij} = A_{ji}$

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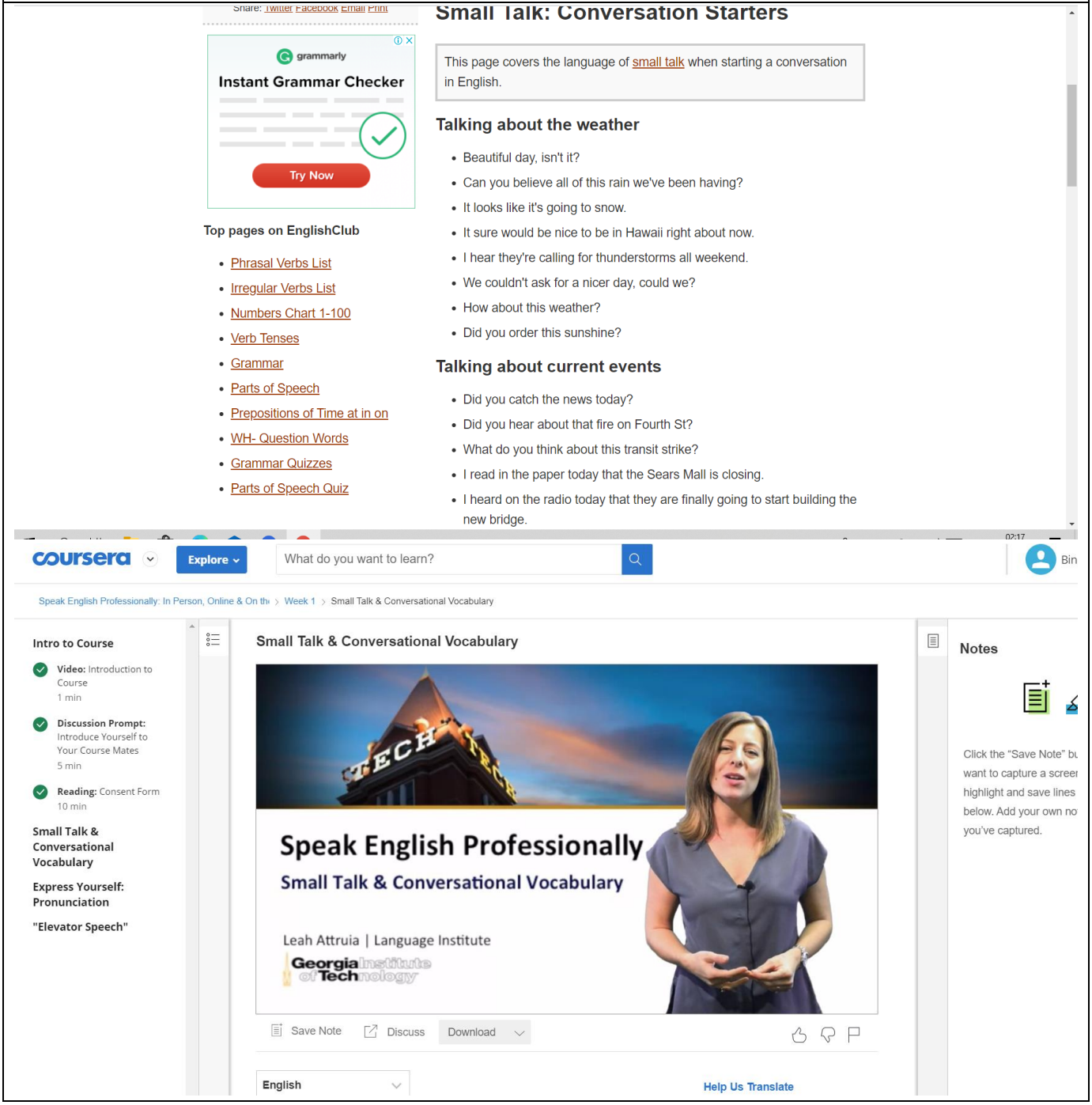
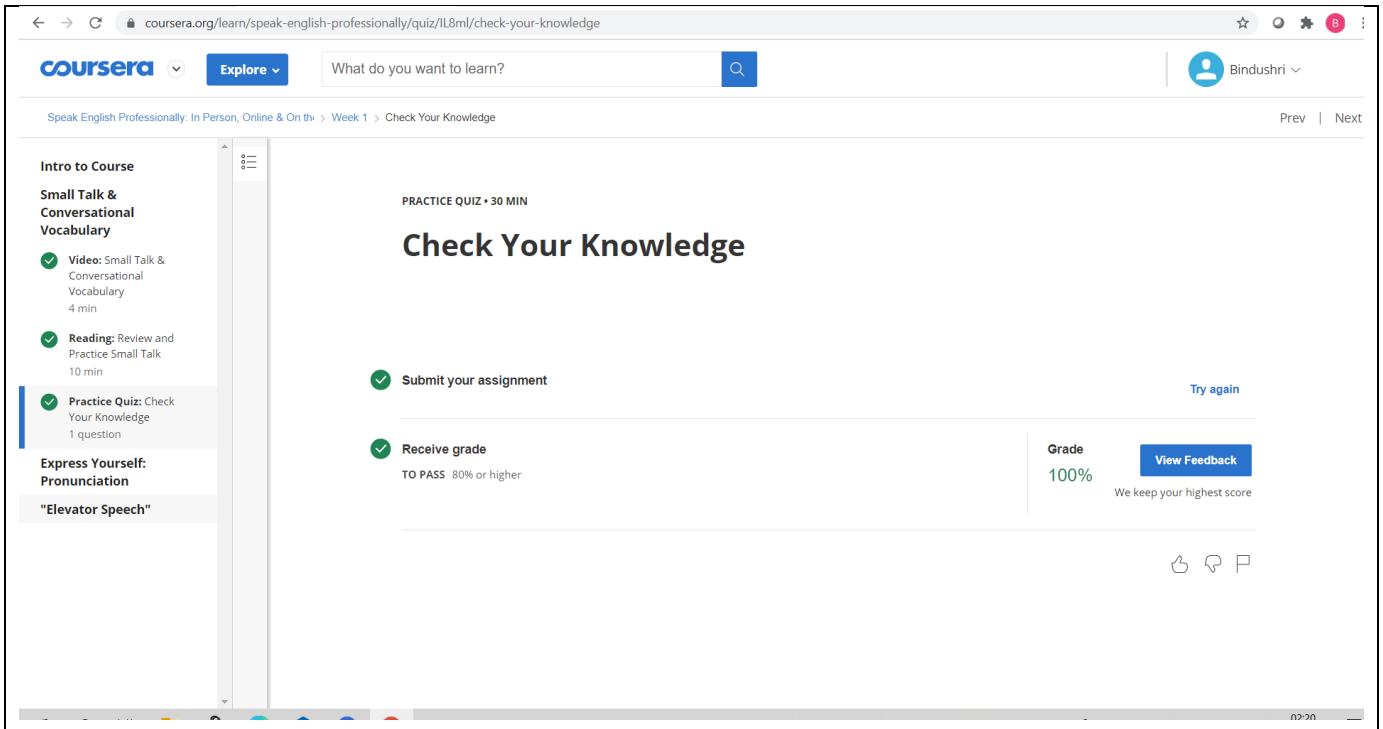
Date:	**15-07-2020**	**Name:**	**BINDUSHRI**
Course:	**Speak English proffesionaly-coursera**	**USN:**	**4AL17EC011**
Topic:	**Week-1**	**Semester & Section:**	**6th Asec**

AFTERNOON SESSION DETAILS(2.00pm to 5.00pm)

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What do you want to learn?
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Speak English Professionally: In Person, Online & On th
Week 1
Check Your Knowledge
Prev
Next
Intro to Course
Small Talk & Conversational Vocabulary
Video: Small Talk & Conversational Vocabulary
4 min
Reading: Review and Practice Small Talk
10 min
Practice Quiz: Check Your Knowledge
1 question
Express Yourself: Pronunciation
"Elevator Speech"
PRACTICE QUIZ • 30 MIN
Check Your Knowledge
Submit your assignment
Try again
Receive grade
TO PASS 80% or higher
Grade
100%
View Feedback
We keep your highest score

Spear English professionally

Intro.

1. Face-to-Face communication
2. Meet and talk online
3. powerful phone talk.

Small-talk

→ everyday conversation

→

* Introduce yourself
* Make a connection
* Ask question
* Be a good listener
* Show your interest