# Basic Matrix Operations

Spoken Tutorial Project
http://spoken-tutorial.org
National Mission on Education through ICT

http://sakshat.ac.in

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# Objectives

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**At the end of this tutorial, you will be able to**

- **Create matrices using data.**
- **Create matrices from lists.**
- **Do basic matrix operations like addition, multiplication.**

# Objectives

- **Perform operations to find out the**
  - **determinant of a matrix**

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  - **eigen values and eigen vectors of a matrix**

# System Specifications

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- **`Python 2.7.6`**

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- **`IPython 4.0.0`**

# Pre-requisite

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**If not, see the pre-requisite Python tutorials on http://spoken-tutorial.org**

# Assignment 1

- **Create a two dimensional matrix `m3` of order `(2, 4)` with elements `5, 6, 7, 8, 9, 10, 11, 12`**

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- Use arange() and reshape() methods

# Determinant of a matrix

- **The determinant of a square matrix can be obtained by using the function det()**

# Inverse of a matrix

- **The inverse of a matrix can be obtained using inv()**

# eigen values and eigen vectors

**Given a square matrix A**

# eigen values and eigen vectors

**Given a square matrix A**

- **eig(A) gives its eigen values**

# eigen values and eigen vectors

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- **eig(A) gives its eigen values**
- **eigvals(A) gives its eigen vector**

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**In this tutorial, we have learnt to,**

- **Create matrices using arrays.**
- **Add, subtract and multiply the elements of a matrix.**
- **Use the function det() to find the determinant of a matrix.**

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- **Find out the inverse of a matrix, using the function `inv()`.**

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- Find out the inverse of a matrix, using the function `inv()`.
- Find out the eigen vectors and eigen values of a matrix, using functions `eig()` and `eigvals()`.

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   - **True**
   - **False**

# Solution of self assessment questions

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1. `A * B`
2. **False**

# Forum to answer questions

- **Do you have questions in THIS Spoken Tutorial?**
- **Choose the minute and second where you have the question.**
- **Explain your question briefly.**
- **Someone from the FOSSEE team will answer them. Please visit**

**http://forums.spoken-tutorial.org/**

# Forum to answer questions

- **Questions not related to the Spoken Tutorial?**
- **Do you have general / technical questions on the Software?**
- **Please visit the FOSSEE Forum**

  **http://forums.fossee.in/**
- **Choose the Software and post your question.**


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- **The FOSSEE team coordinates coding of solved examples of popular books**
- **We give honorarium and certificate to those who do this**

**For more details, please visit this site:**

**http://tbc-python.fossee.in/**

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- It is supported by the National Mission on Education through ICT, MHRD, Government of India
- More information on this Mission is available at: http://spoken-tutorial.org/NMEICT-Intro


# THANK YOU!

**For more Information, visit our website**
**http://fossee.in/**