

# Spoken Tutorial: Presentation using $\text{\LaTeX}$ and Beamer

Author

Text

31 December 1900



- **Topic one**
- **Topic two**
- **Topic three**
- **Topic four**
- **Topic five**



Let us start with the model of an inverted pendulum:

$$\frac{d}{dt} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & -\gamma & 0 & 0 \\ 0 & \alpha & 0 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ -\delta \\ -\beta \end{bmatrix} \Delta\mu$$

Proportional, integral, derivative controller is most popular in industry. It has three tuning parameters:  $K$ ,  $\tau_i$  and  $\tau_d$ . The integral mode includes the term  $\int_0^t()dt$ .

$$u(t) = K \left\{ e(t) + \frac{1}{\tau_i} \int_0^t e(t)dt + \tau_d \frac{de(t)}{dt} \right\}$$



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- ④ Web based support through [www.sakshat.ac.in](http://www.sakshat.ac.in).**







# IIT Bombay

Golden Jubilee 2008

*Tryst with Excellence*



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# Table: From Spoken Tutorial on Tables

Fruit details		Cost calculations		
Fruit	Type	No. of units	cost/unit	cost (Rs.)
Mango	Malgoa	18	50	1,500
	Alfonso	2	300	
Jackfruit	Kolli Hills	10	50	500
Banana	Green	10	20	200
Total cost (Rs.)				2,200



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# Example of Verbatim to Illustrate Scilab

```
-->a = 1:5, b = 1:2:9
```

```
a =
```

```
! 1. 2. 3. 4. 5. !
```

```
b =
```

```
! 1. 3. 5. 7. 9. !
```

```
-->a - 2
```

```
ans =
```

```
! - 1. 0. 1. 2. 3. !
```



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# There Is No Largest Prime Number

The proof uses *reductio ad absurdum*.

## Theorem

*There is no largest prime number.*

## Proof.

- ❶ Suppose  $p$  were the largest prime number.
- ❷ But  $p + 1$  is greater than  $p$ , thus divisible by some primenumber not in the first  $p$  numbers. □



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- ❷ Let  $q$  be the product of the first  $p$  numbers.
- ❸ Then  $q + 1$  is not divisible by any of them.
- ❹ But  $q + 1$  is greater than 1, thus divisible by some primenumber not in the first  $p$  numbers. □

