

Lec115 Rich get Richer Phenomenon : Introduction to Power Law

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Powerlaw

New city. adults
Make a note of heights of people in the town

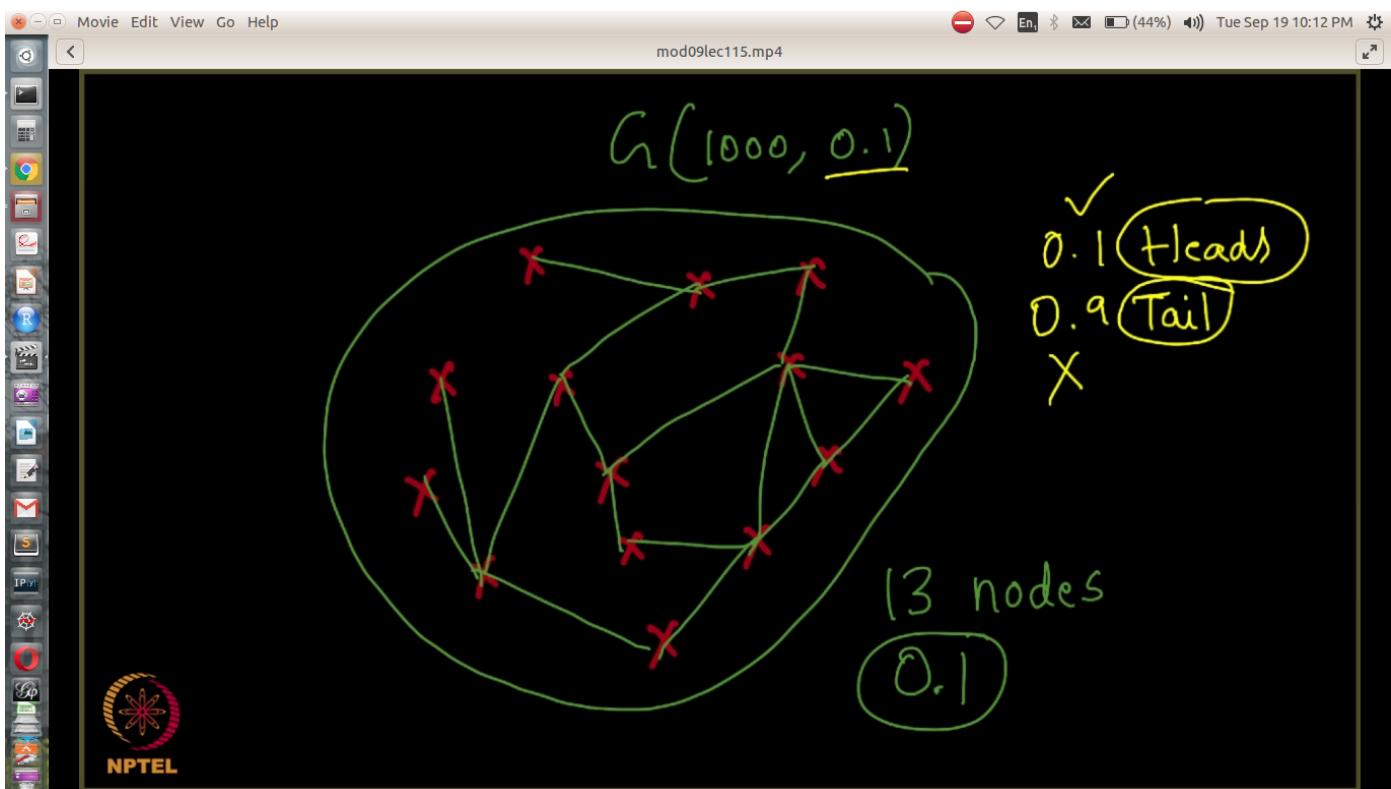
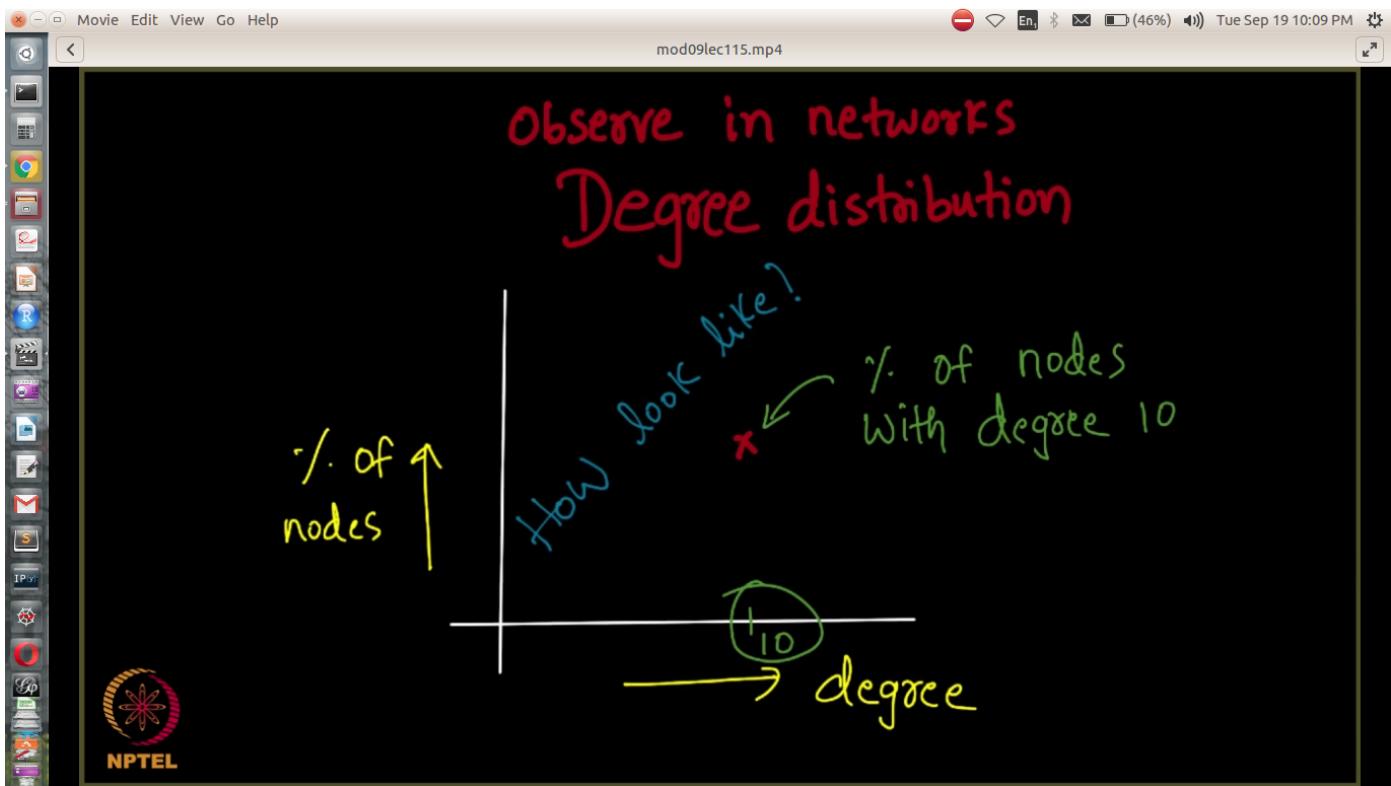
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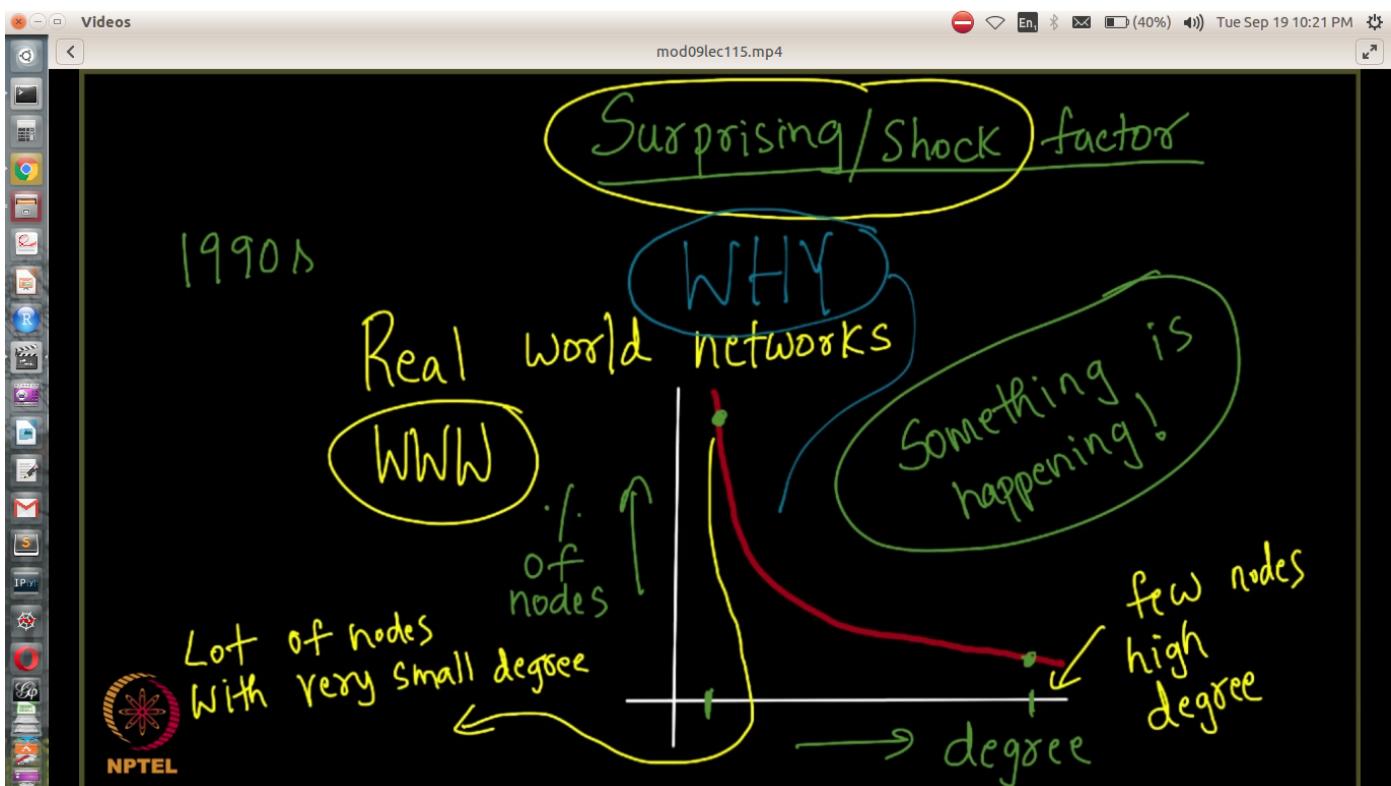
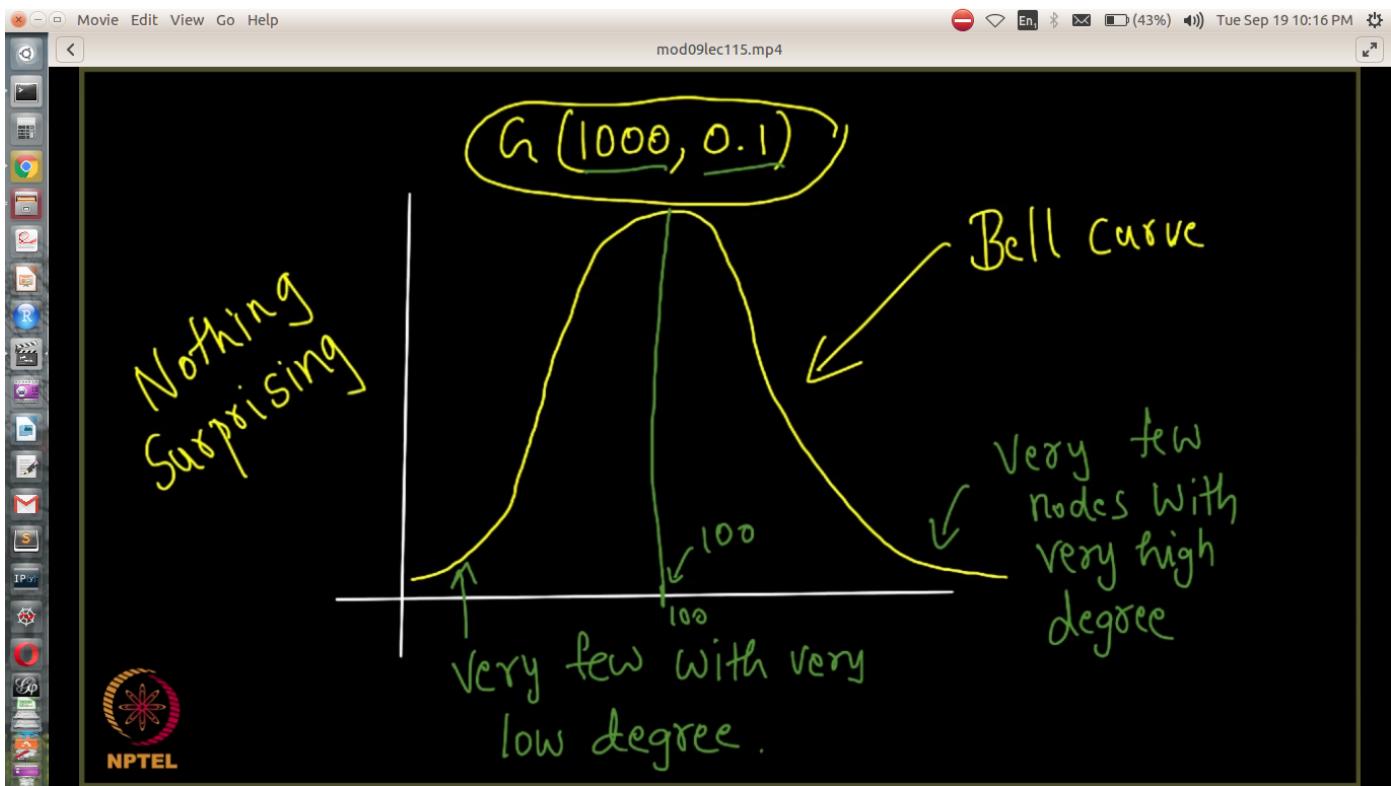
① IQ of people

② Weight

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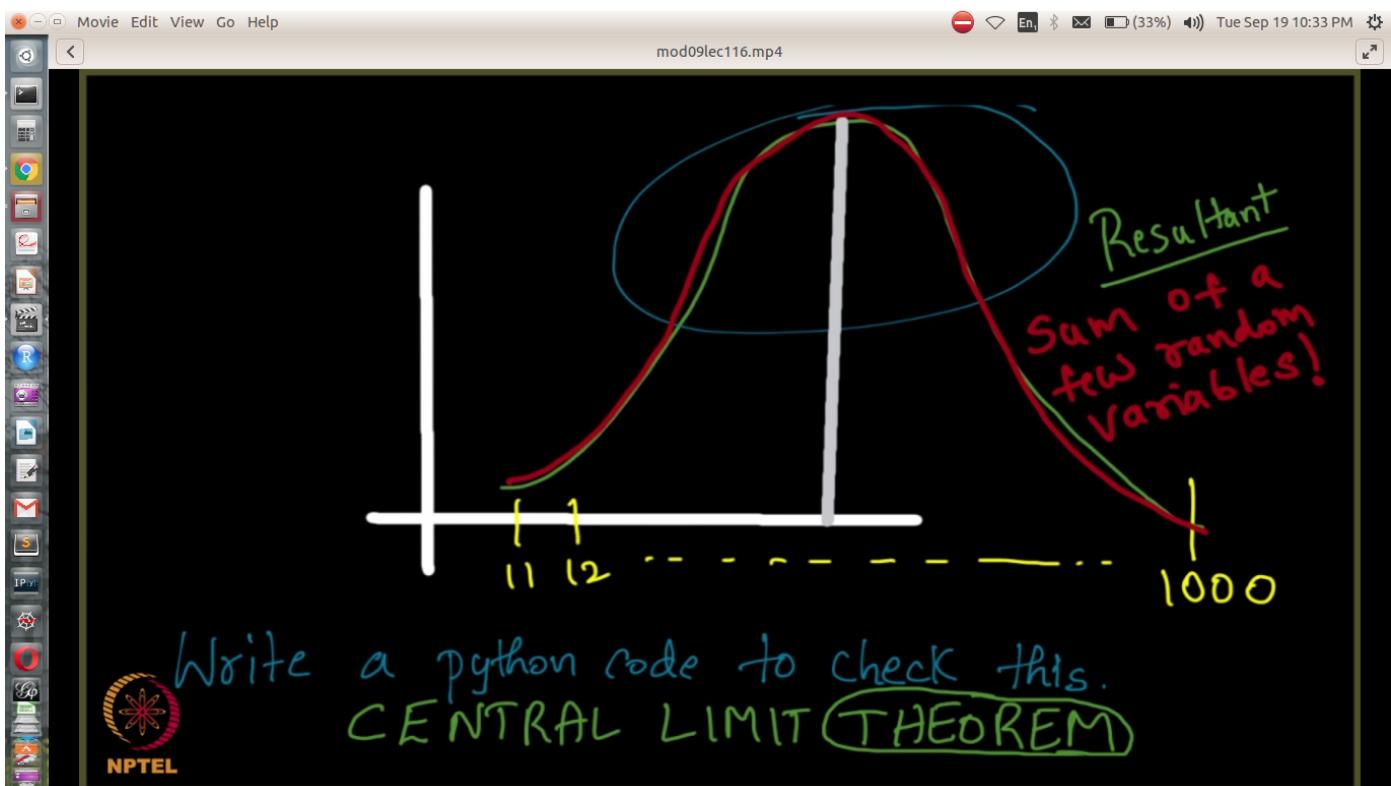
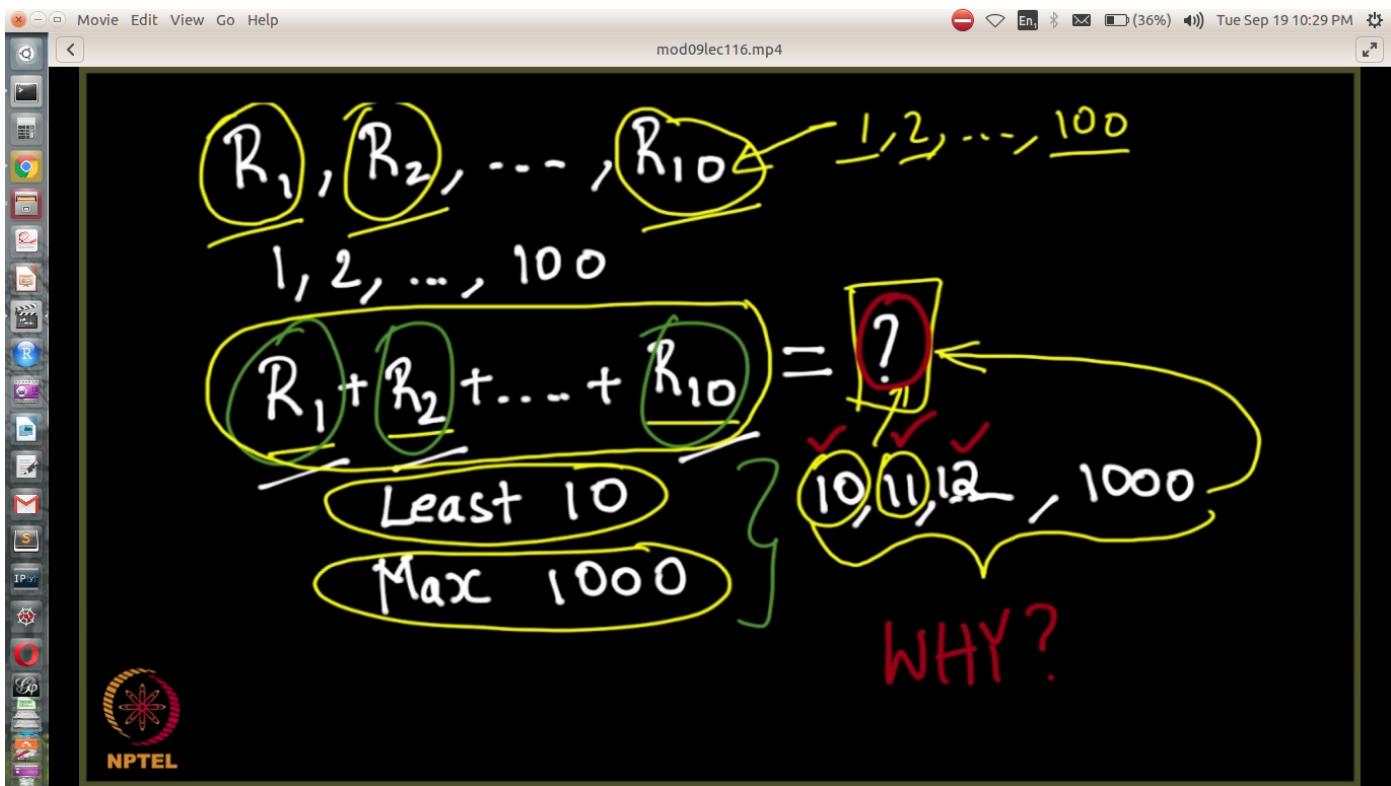
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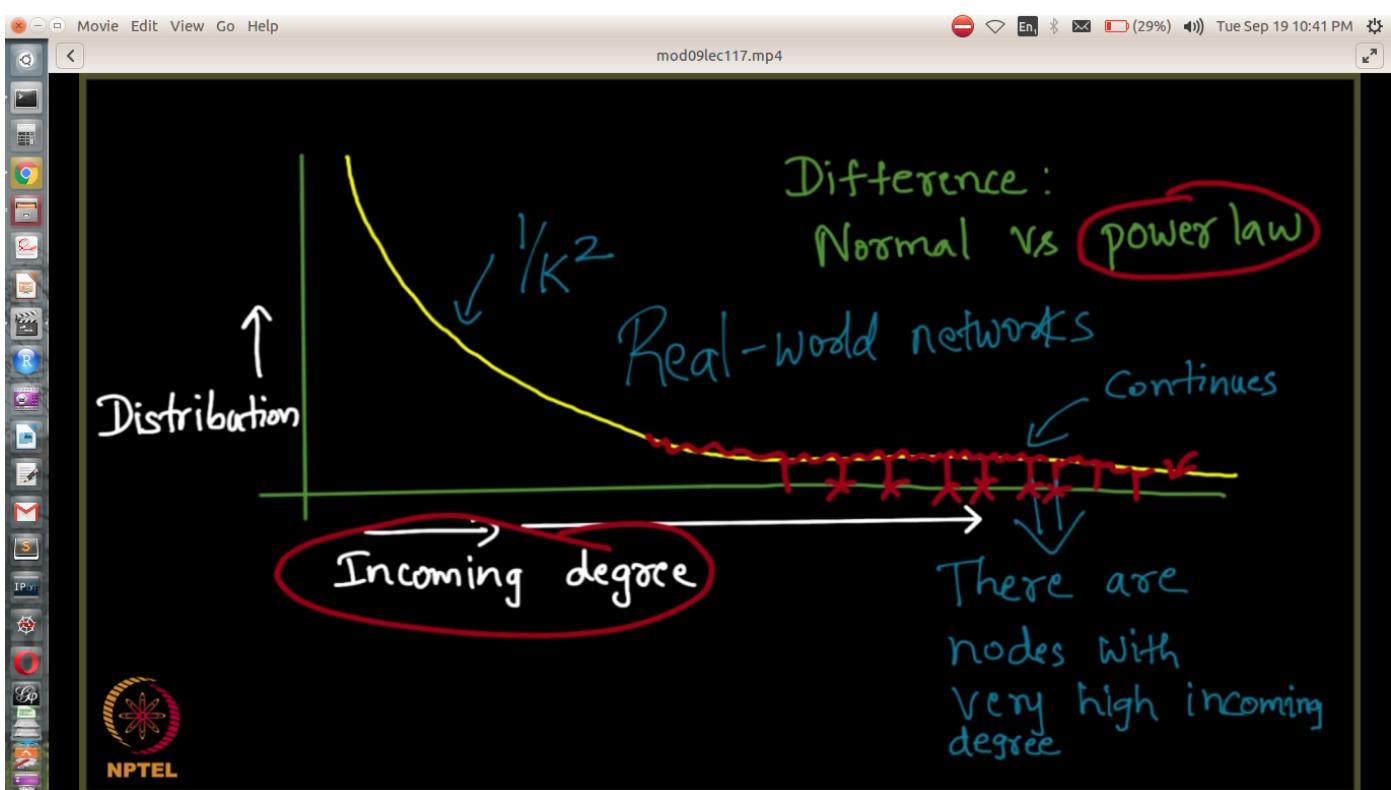
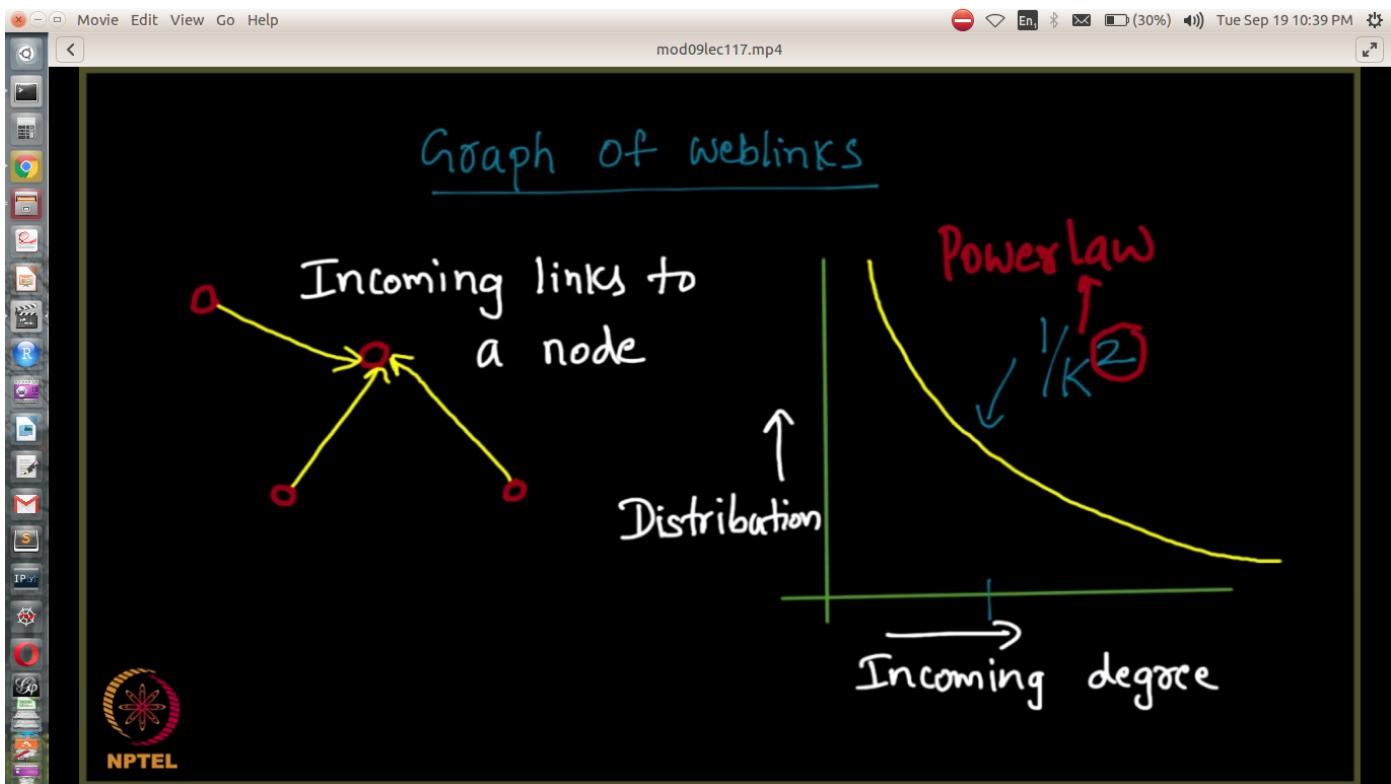
Lec116 Rich get Richer Phenomenon : Why do normal distributions appear?



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- mod09lec116.mp4
- 1) I pick randomly $\{1, 2, \dots, 100\} \rightarrow R_1$
 - 2) You pick randomly $\{1, 2, \dots, 100\} \rightarrow R_2$
 - ⋮
 - 10) Picks $\{1, 2, \dots, 100\} \rightarrow R_{10}$
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Lec117 Rich get Richer Phenomenon : Power law emerges in www graph



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mod09lec117.mp4

Power law ↘ is observed in many situations:

- i) Distribution of telephone conversation duration.

of such calls ↑

Time duration →

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Lec118 Rich get Richer Phenomenon : Detecting the presence of power law

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mod09lec118.mp4

Power law in WWW graph

Network: Powerlaw

$f(k) = \frac{1}{k^2}$ [2] \downarrow [3]

1/k

1/k²

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modo9lec118.mp4

$f(k) = \frac{1}{k^\alpha}$ for some α

$$\log f(k) = \frac{\log 1 - \log k}{\alpha}$$

$$\Rightarrow \log f(k) = 0 - \alpha \cdot \log k$$

$$\log f(k) = (-\alpha) \cdot \log k$$

$$y = (-\alpha) \cdot x$$

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modo9lec118.mp4

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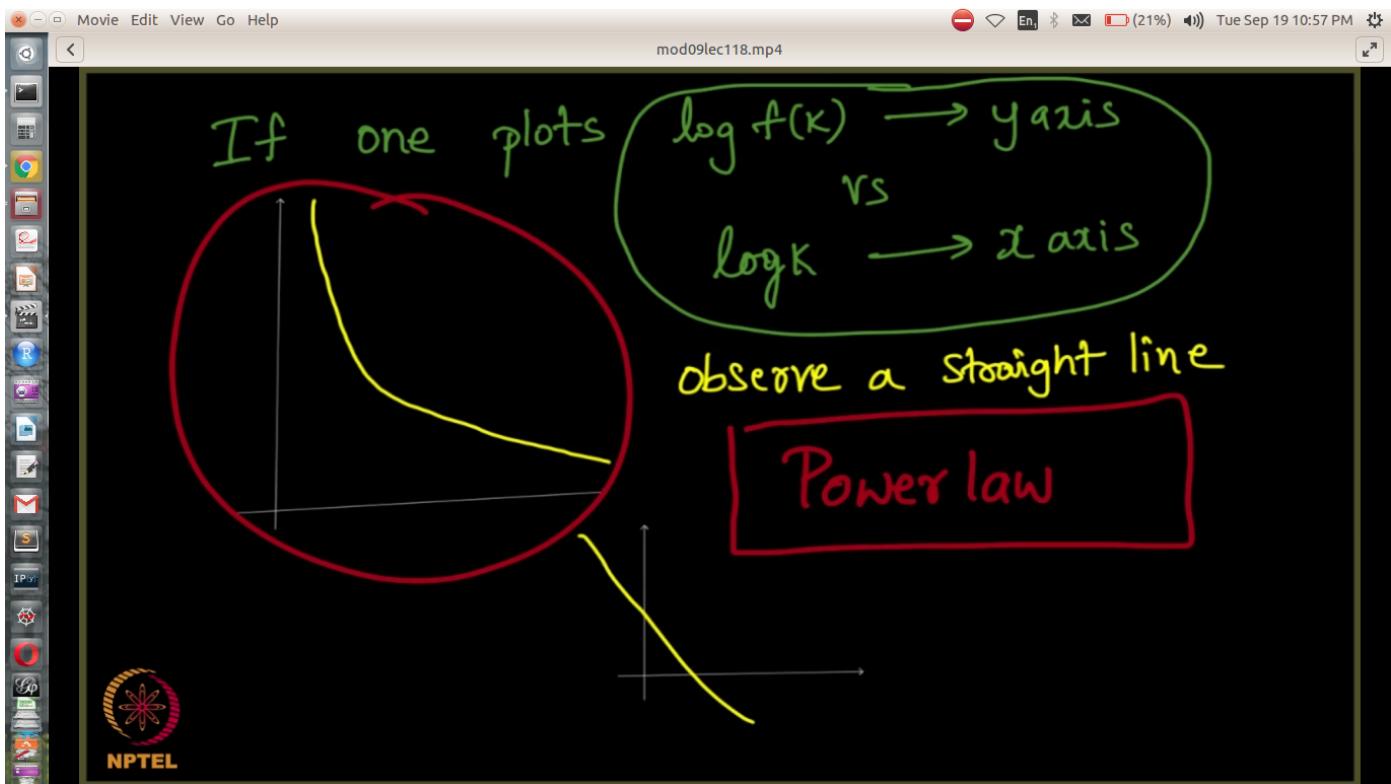
$$\log f(k) = (-\alpha) \cdot \log k$$

$$y = (-\alpha) \cdot x$$

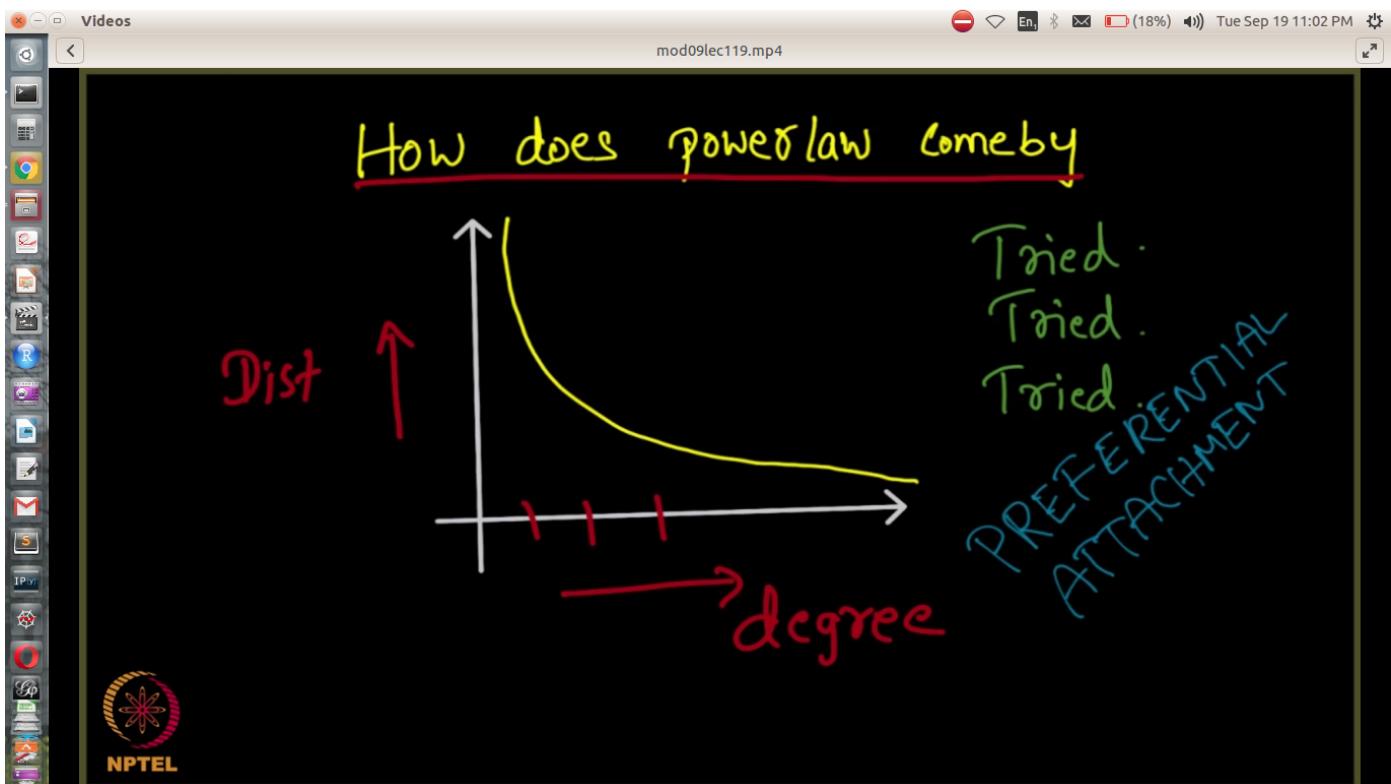
$$f(k) = \frac{1}{k^\alpha}$$

St. Line

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Lec119 Rich get Richer Phenomenon : Rich get Richer Phenomenon



Videos mod09lec119.mp4

Classroom

A new person is attracted to someone who has many friends.

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Videos mod09lec119.mp4

Ideal mode

Classroom

A new person is attracted to someone who has many friends.

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