NPTEL

NPTEL ONLINE CERTIFICATION COURSE

Discrete Mathematics
Recurrence Relation

Visualizing complexity order as a graph

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Let us do a small experiment, look at this function F(n) = it's a degree one function, correct, order N function and look at G(n) it is order N square function, right, and the coefficients are different here as you can see, let me plot F(n) and G(n)
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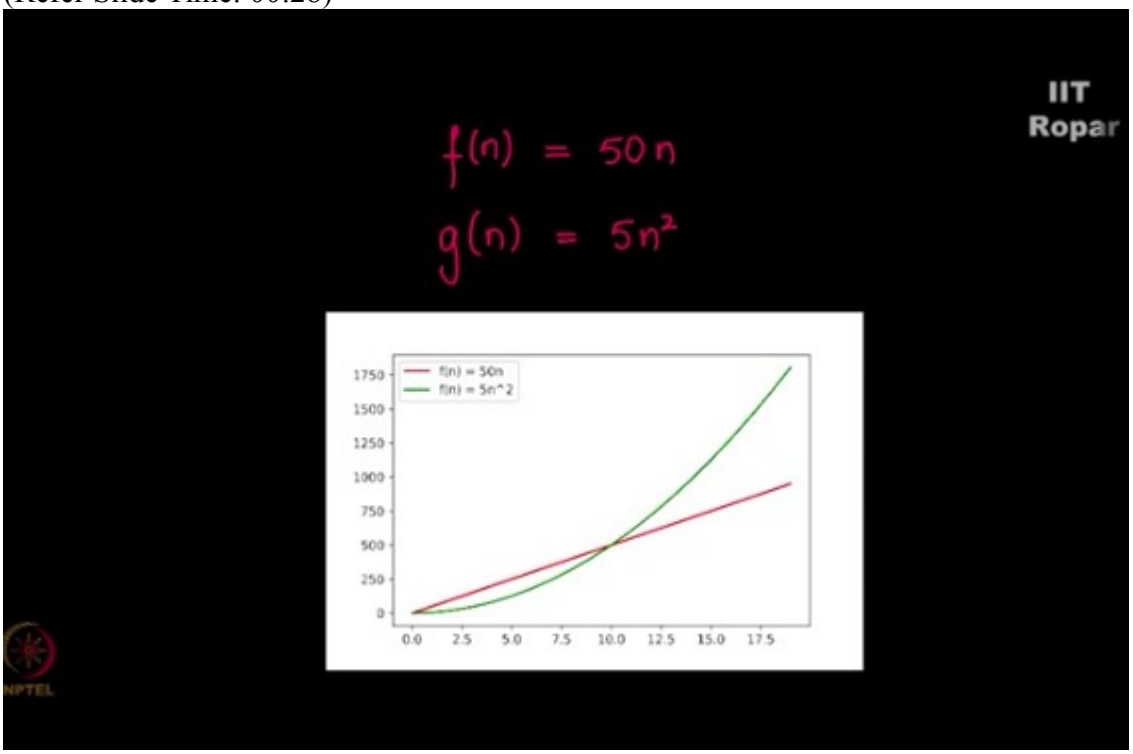

and as you can see F(n) appears to be better than G(n) to begin with, but eventually you will see that G(n) climbs up and becomes better than F(n) that is because G(n) is an order of N square, while F(n) is of order N, so the kangaroo and cat example as I repeat you cannot judge anything by the first few steps, right, you can only judge based on after stage how do the functions behave, so a thumb rule is look at that degree of the given polynomial, F(n) is a

degree one polynomial, G(n) is a degree two polynomial, higher the degree more dominating the functions, correct, it's only evident from the plot.

Let us look at the functions that we discussed just now, Shubhada's function S(n), Ravi's function R(n) and Tarik's function T(n) is given by these three curves here, this three plots, as you can see Tarik's plot grows really quickly although it starts of slow.
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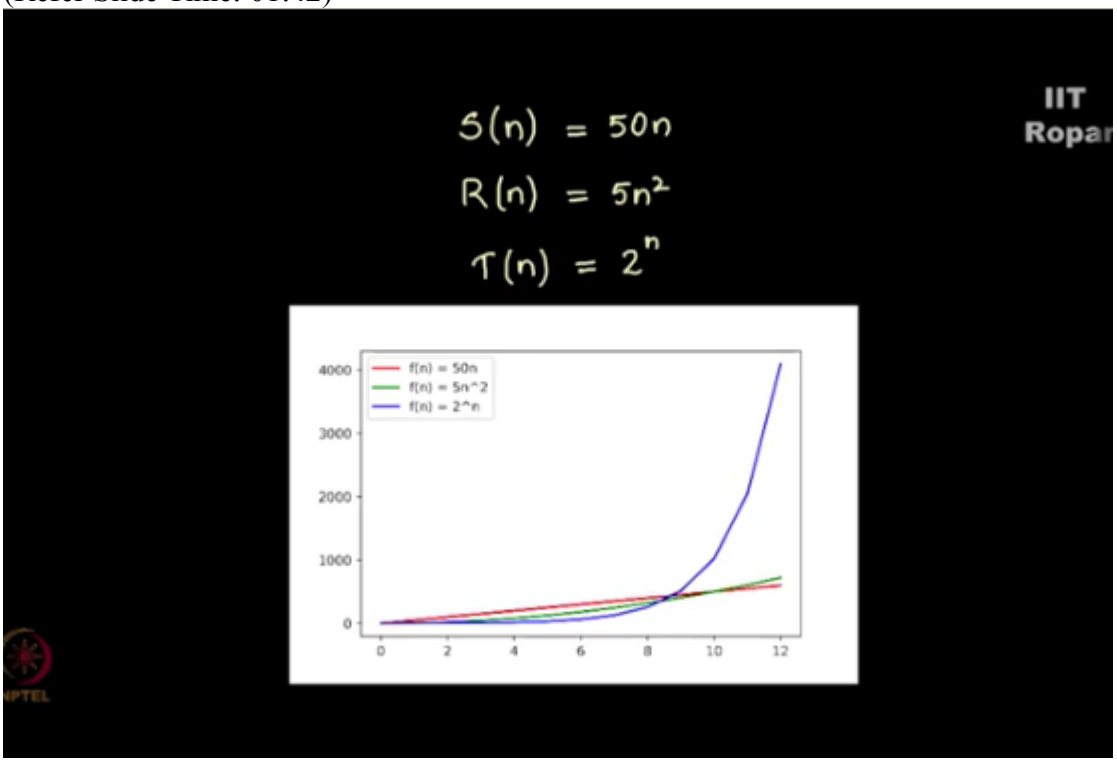

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