NPTEL

NPTEL ONLINE CERTIFICATION COURSE

Discrete Mathematics
Recurrence Relation

A basic introduction to 'complexity'

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Let us look at these two animals, a kangaroo and a cat,
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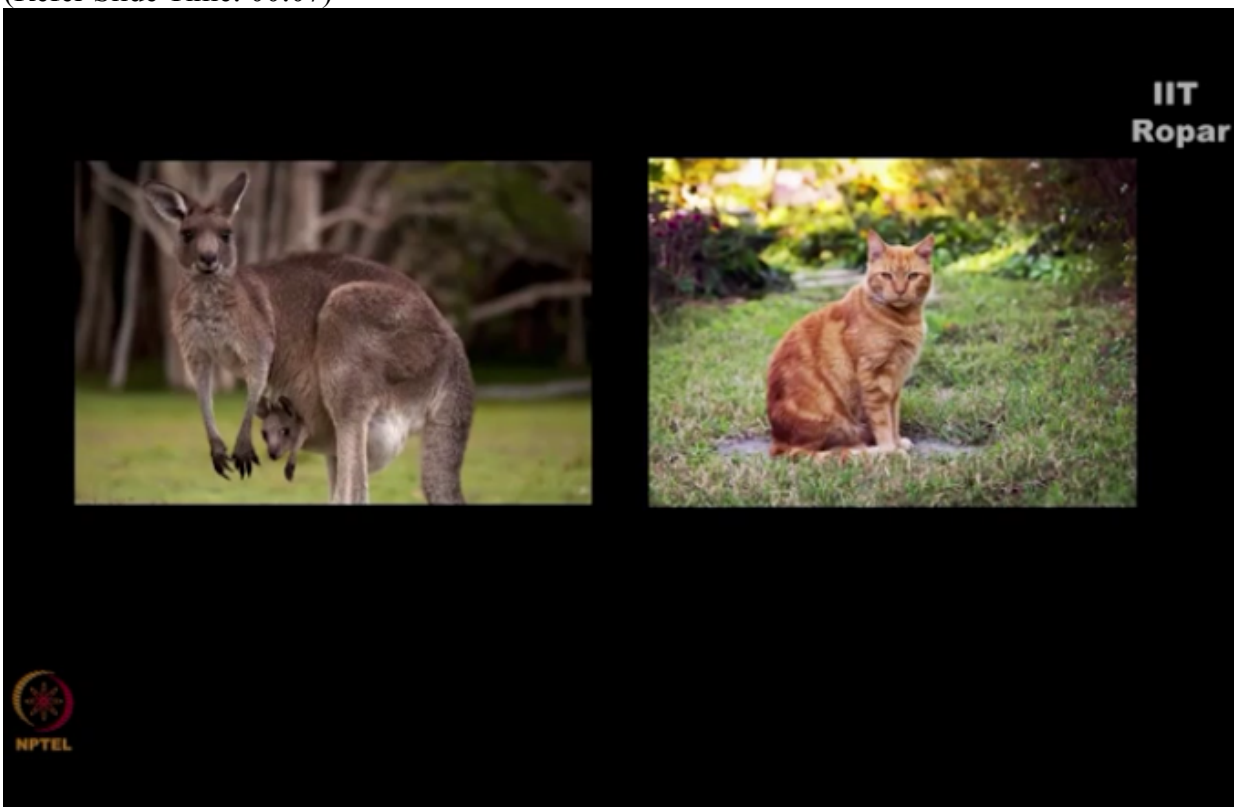

what most of you probably do not know is kangaroo is a very big animal weighing roughly 90 Kgs, while a cat weighs only 45 Kgs exactly half you see, or an average that is.
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Now do you know how big is a kangaroo's offspring just born kangaroo baby kangaroo? It is simply 2 centimeters in width, and 1 gram in weight, 1 gram believe me or not, 1 to 2 grams maximum, that's all it's a very, very, very small, it look like a biscuit when it's born, while a cat when it is born is close to 1kg, roughly 85 grams to be precise, so where is a gram of kangaroo's newly born offspring, and where is 85 grams of a kitten newly born.
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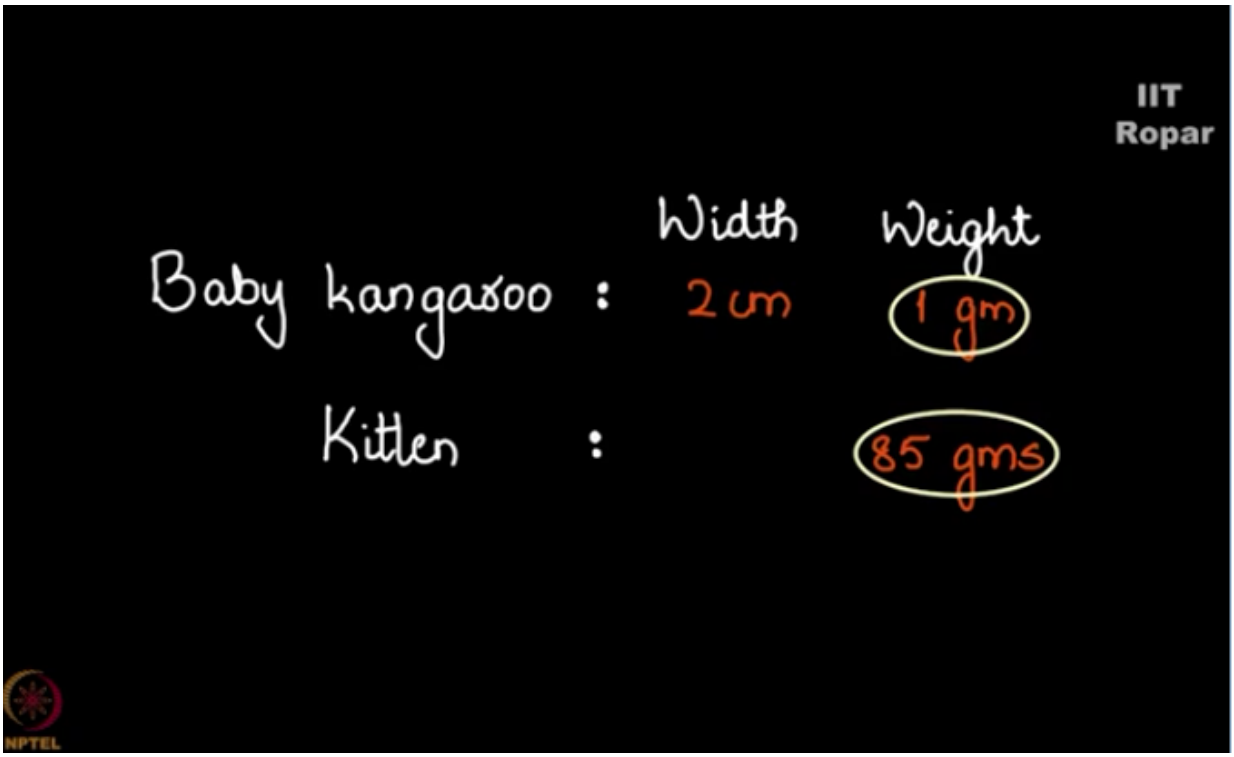

Now so well imagine I go ahead and judge the size of a adult kangaroo, and an a adult cat by looking at the size of a just born infant, I will surely be wrong, a cat is 85 times more in weight than a kangaroo when it's born, but eventually the kangaroo grows way bigger and weigh way more than what a cat weighs, correct, we should not judge based on how 2 people start, it's all about how they grow, right, keep this analogy in mind we need this to understand what are the four most important concepts in computer science called the algorithmic complexity.
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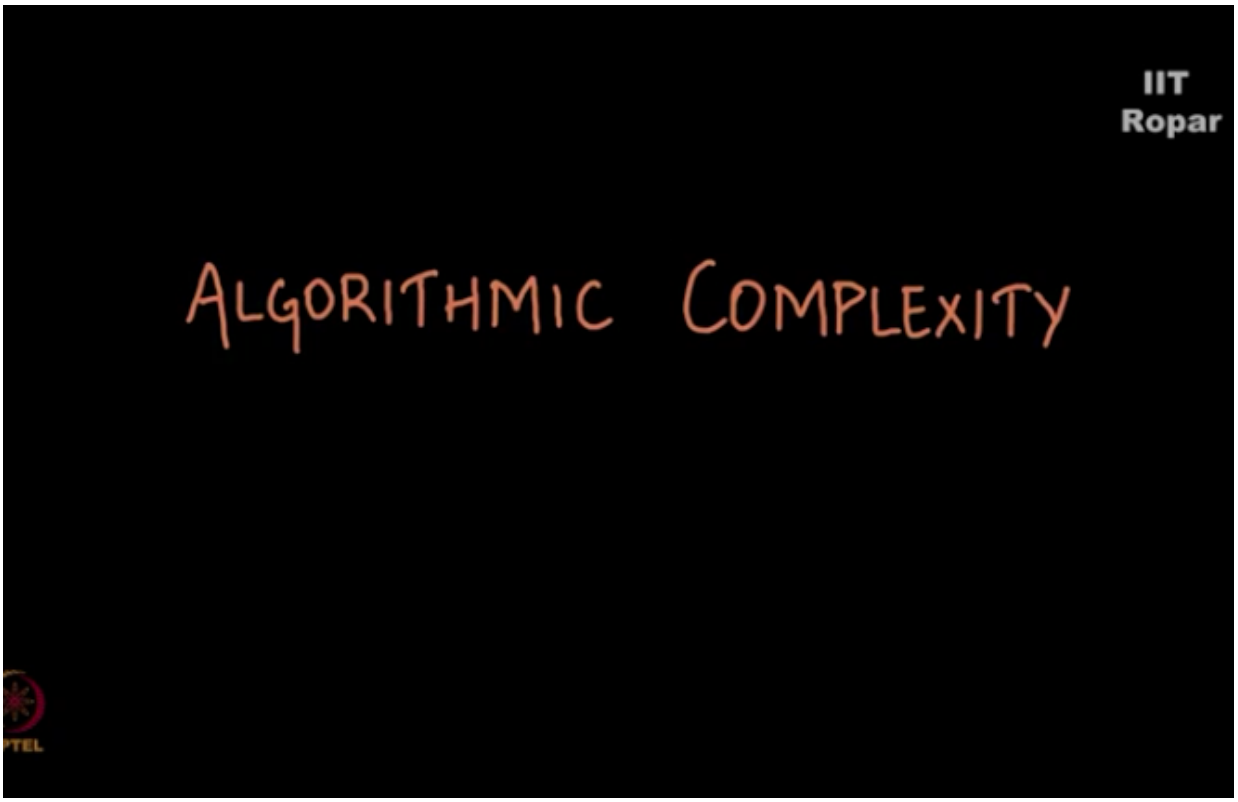

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