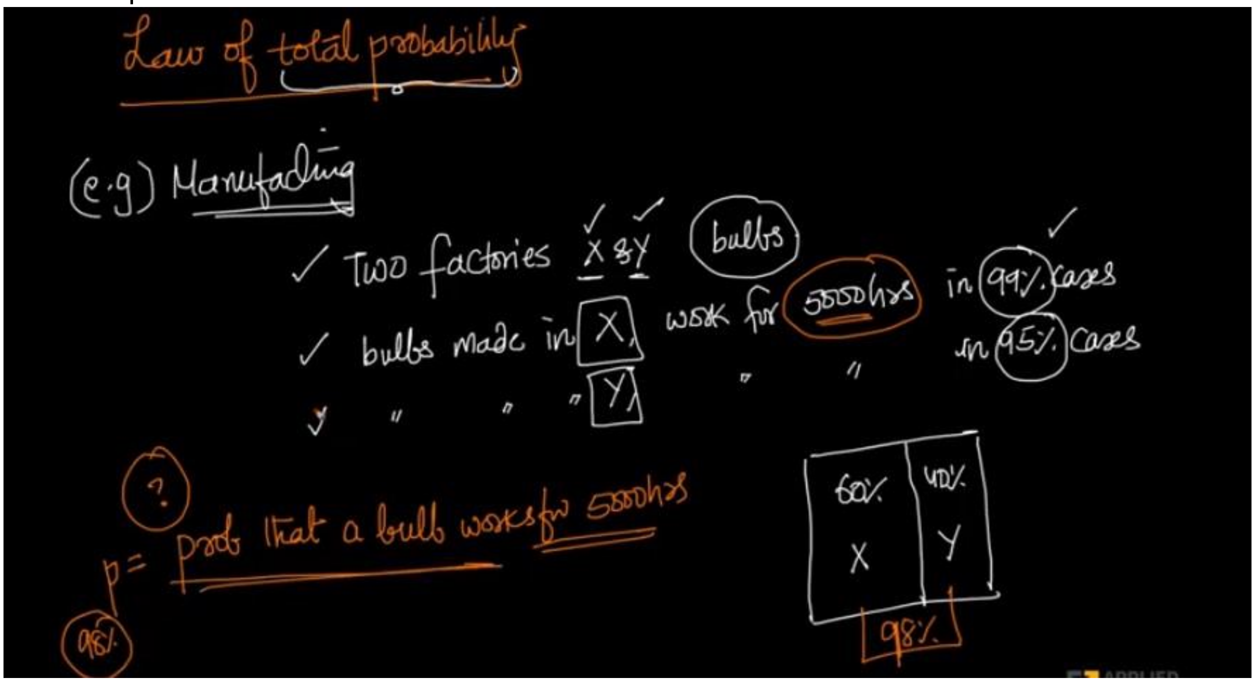
21.9 Law of total Probability

Timestamp 3.00

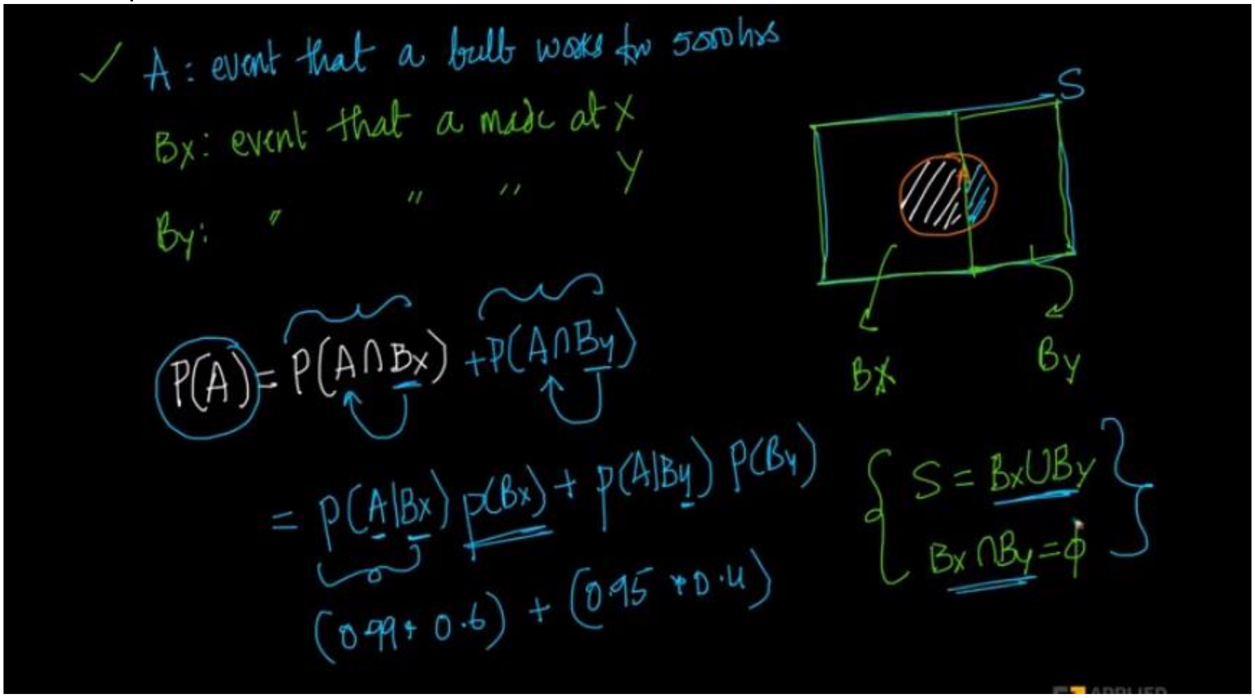


1. Above is an example of use case where we use Law of total probability

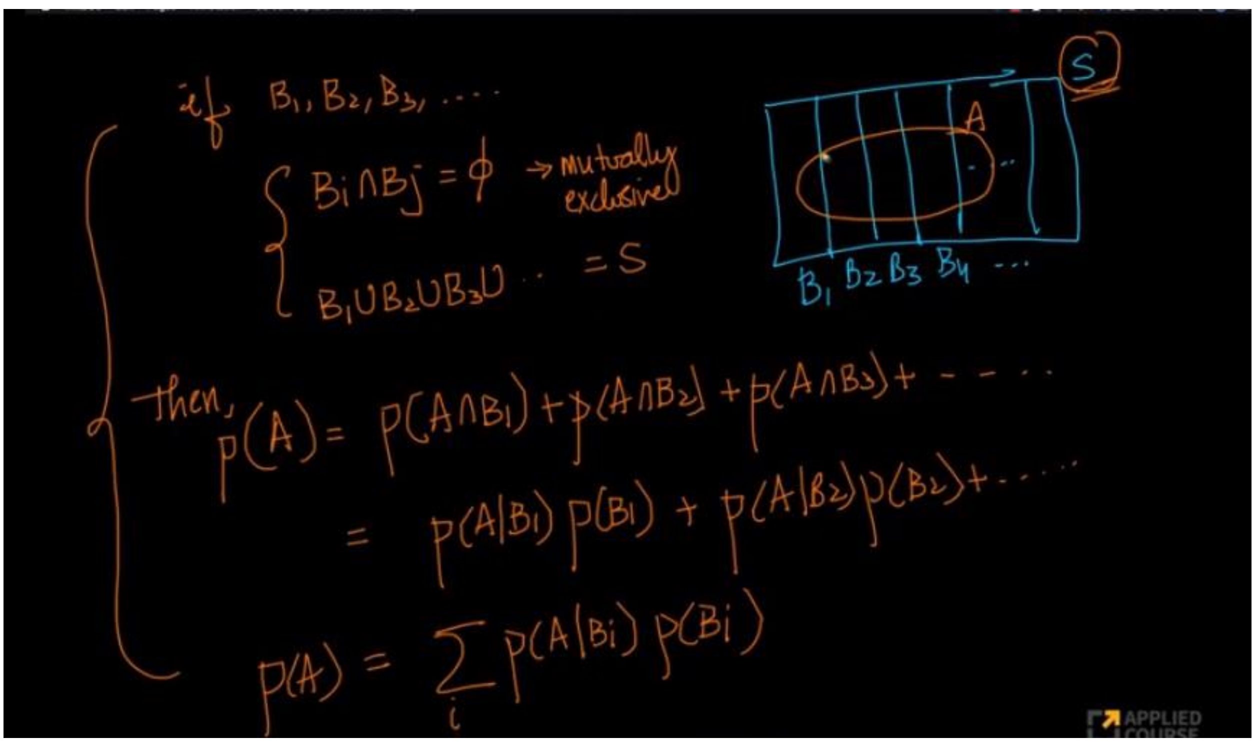
2. We have two manufacturing factories X and Y. As shown above if we have a package where we have 60% of bulbs from factory X and rest 40% from factory Y. Now we need to find the probability that the bulb works for 5000hours.

A single bulb can't be manufactured in both factory A and B. So, this is a mutually exclusive event

Timestamp 10.6



- We can solve the problem as shown above using total probability.



- If you have several events B1, B2, B3,B4…….etc. such that all are mutually exclusive events and union of all the events is sample space S (mutually exhaustive events). Then probability of any event A can be written as shown above using law of total probability.