Discrete Mathematics

Functions

Number of errors - Solution

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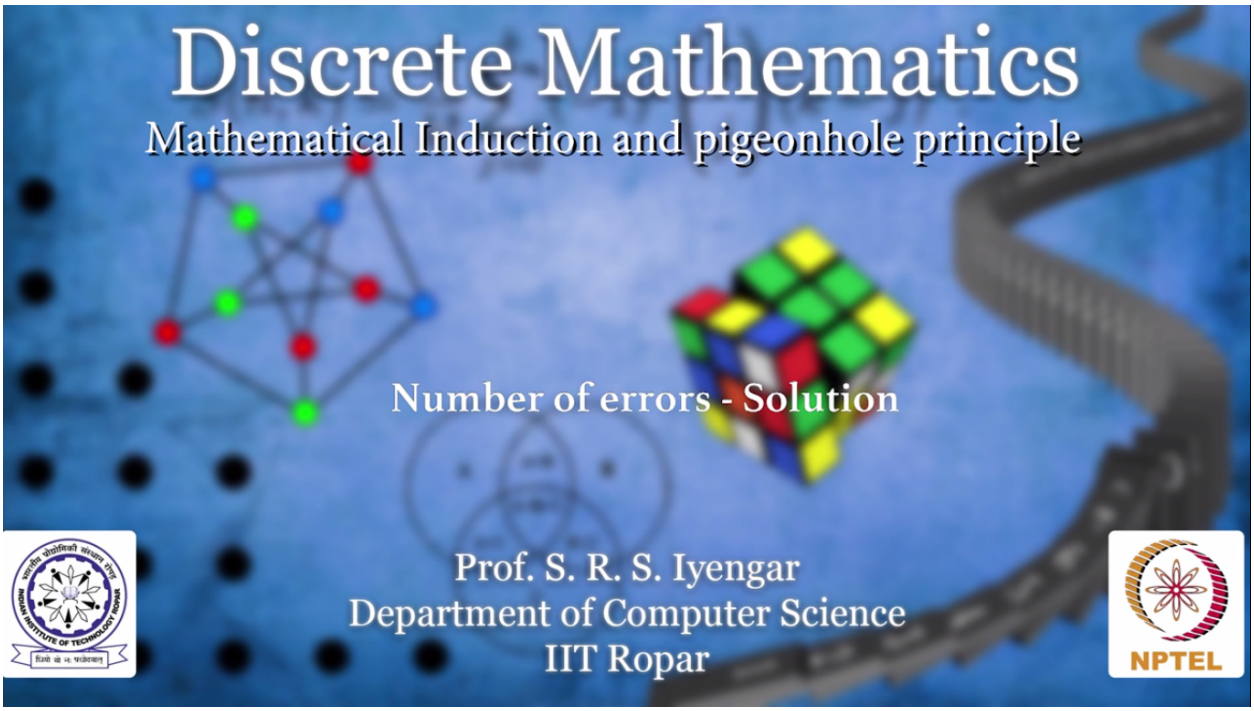
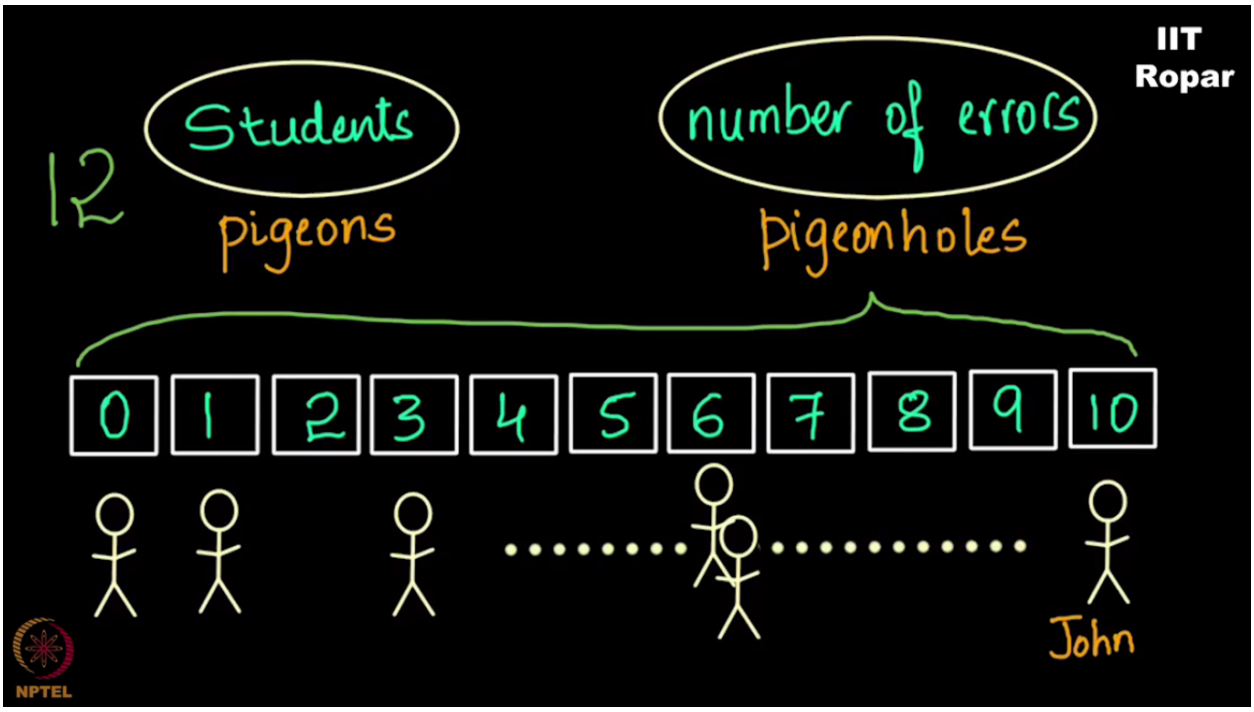


Now let me first jot down what is the pigeon and what are the pigeonholes here. I will consider I will assume students to be pigeons. There are 12 students and hence there are 12 pigeons. Assume this way.

Now what are the pigeonholes? I assume that number of errors to be a pigeonhole. I will tell it to be a box. It will be easier. So the number of errors maximum number of errors is 10 and everybody has made less than that. John is the only boy who has made 10 errors. Rather he is the only student who has made 10 errors. Everybody has made less than 10 errors. Right.

So now what are the range of my errors? It is 0 to 10. Somebody would have made no errors, somebody would have made 1 and so on. We have 12 students. Now I assume these numbers of errors to be the pigeonholes. So we have 11 pigeonholes. 0, 1, 2, 3, and so on up to 10.

0 will have the pigeonhole 0 will have that student who has made no errors. 1 will have that student who has made just 1 error. And so on upto 10. Now 3 will have that many students who have made three errors. Right. Now in the 10^{th} pigeonhole who will be there because only John has made 10 errors, rest of them – rest of the 11 of them have made less than 10 errors. Right.



Now how many number of pigeonholes are there? There are 11 pigeonholes and pigeonhole 10 was occupied by John which guarantees that there is one such pigeonhole where it has two students who has made equal number of errors. Think about it.