
Discrete Mathematics

Functions

Consecutive integers solution

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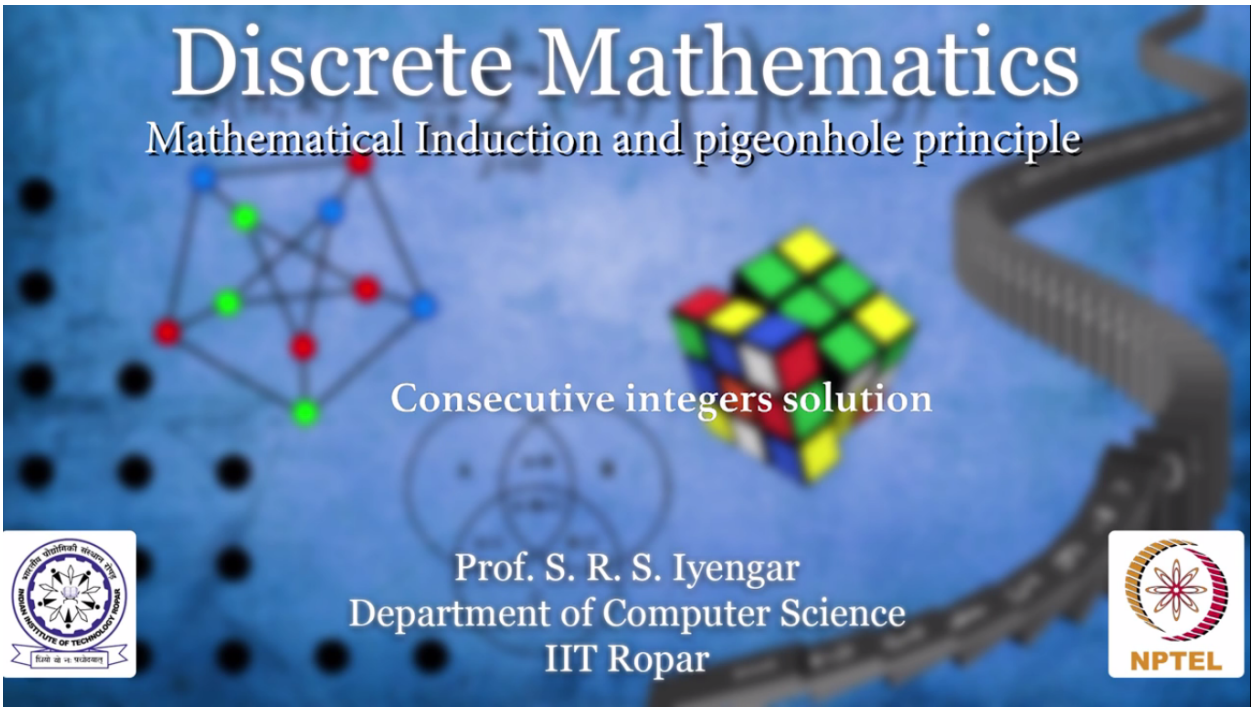



Did you observe the problem? You must first identify what are the pigeons and what are the pigeonholes in this problem. Let me state it.

We have 100 integers you see 1 to 100 right. So what I want to do is I am going to partition this set of 100 integers as 50 sets. What I will do? I will consider these sets as my pigeonholes. Okay. so 1,2 is one pigeonhole. 3,4 is one pigeonhole and so on, 99,100 is another pigeonhole.

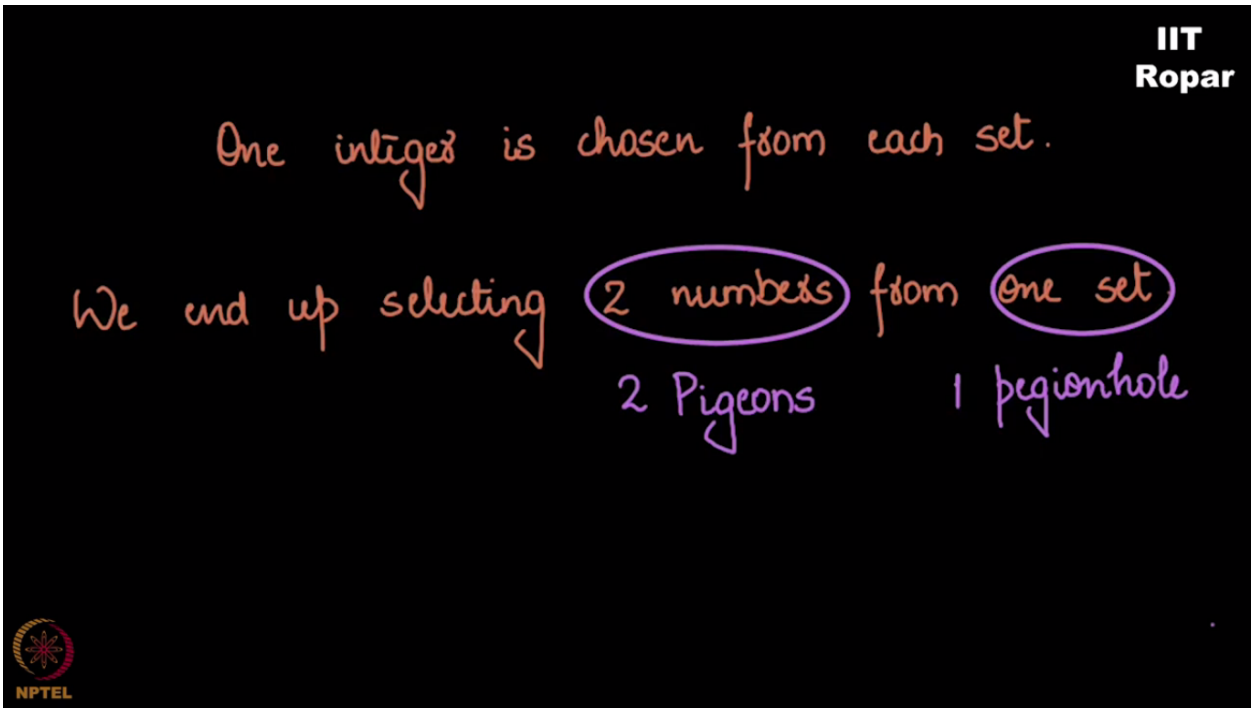
You see I have partitioned my entire set of 100 integers into these pigeonholes. So when I do the union I must get 100 integers and they are disjoint intersection does not have anything. Okay.

So I have created my pigeonholes. Now when I select 51 integers randomly what happens? If I select 1 here, 4, here, 99 here and so on. How many integers do I select at the end 50 integers. Very clear. How? Because there are 50 pigeonholes you see and from 50 pigeonholes I am picking 50 integers.

Now when I pick the $51^{th}$ integer what do I mean by that? My integers are the pigeons here. So when the 51th pigeon is chosen it has to be one among the already chosen pigeonhole. You must pause here and think for a while.

I have to end up choosing one more integer among the already selected integers. Assume I have chosen one integer from each of these sets. To choose my 51th integer I will have to select that integer among these sets. Okay. What does it mean? I will end up selecting two numbers from one set.

So it only means that I've selected two pigeons from the same pigeonhole or there are two which is in the same pigeonhole correct. And hence you will end up having two consecutive integers among the number selected.




It is very obvious if you think for a while. This video might be repetitive but it will help you understand it better.