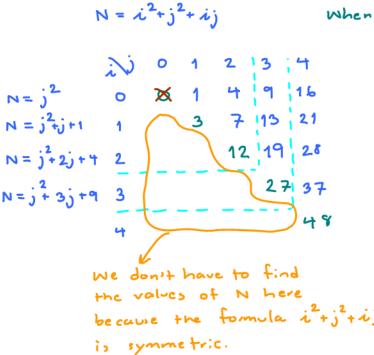
ECS 455: In-Class Exercise # 3

Instructions

- 1. Separate into groups of no more than three persons.
- 2. The group cannot be the same as your former group.
- 3. Only one submission is needed for each group.
- Write down all the steps that you have done to obtain your answers. You
 may not get full credit even when your answer is correct without showing
 how you get your answer.
- 5. Do not panic.

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Find the 10 smallest unique values of cluster size, starting with N = 1.



When i=j, $N=i^2+i^2+i^2=3i^2$

First, we consider i < 2, j < 2.

We still don't have to distinct values of N. so, we expand our calculation.

we consider i < 3 ; < 3.

Again, we only have nine distinct values of N. So, we further expand our calculation.

Now, consider ist, jet.

Here, we have 14 distinct values

of N. We need 10. So, the current

10 lowest values are

1,3,4,7,9,12,13,16,19,21.

Note that we con't stop here yet. We need to show that for the i, j values that we haven't considered, they can't give N that is <21.

This is easy to show because for the (i,j) pairs that we haven't considered, at least one of the i and j must be 3.5. This implies they will give N > 2.5. Therefore, we can't miss any N < 2.1 by stopping our consideration at $i \le 4$, $j \le 4$.

So, the ten smallest values of N are

1,3,4,7,9,12,13,16,19,21.