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## Q3 (1.0/1.0 points)

Suppose relation Student has 20 tuples. What is the minimum and maximum number of tuples in the result of this expression:

$$\rho_{s1(i1,n1,g,h)}Student \bowtie \rho_{s2(i2,n2,g,h)}Student$$

- ☐ minimum = 0, maximum = 400
- ☐ minimum = 20, maximum = 20
- ☒ minimum = 20, maximum = 400 ✓
- ☐ A4: minimum = 40, maximum = 40

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## Q4 (1.0/1.0 points)

Suppose relations College, Student, and Apply have 5, 20, and 50 tuples in them respectively. Remember that cName is a key for College. Do not assume sName is a key for Student. Do assume that college names in Apply also appear in College. What is the minimum and maximum number of tuples in the result of this expression:

$$\pi_{cName}College \cup \rho_{cName}(\pi_{sName}Student) \cup \pi_{cName}Apply$$

- ☒ minimum = 5, maximum = 25 ✓
- ☐ minimum = 5, maximum = 75
- ☐ minimum = 25, maximum = 45
- ☐ minimum = 75, maximum = 75

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