

Name1:

Name2:

You are the DB of a large company, with databases that have millions of tuples. You need to improve the performance of your DB.

For the following queries, what indexes will speed up their execution? Assume  $R(a, b, c)$ ,  $S(a, d, e)$ .  $S(a)$  is a FK to  $R(A)$ .

1.  $\Pi_{a,b}R$

2.  $\Pi_{a,b}\sigma_{b=3}R$

3.  $S \bowtie R$

4.  $\sigma_{a>10}R$