# Pop Quiz

The State of California recently decided to charge sales taxes on Amazon shipments to California residents. The following query calculates the additional taxes incurred by this change:

purchases: a set of (user_id, purchased_product, price_before_taxes)

addresses: a set of (user_id, address, zipcode)

A = join(purchases, addresses, purchases.user_id == addresses.user_id)

B = reduce(A, user_id, sum(price_before_taxes))

C = filter(B, if_in_california(zipcode))

Output C

Name two optimizations that you can perform on this query. Justify why these optimizations will produce a faster plan