

## Step-1

We know that a positive definite matrix cannot have a zero on its diagonal.

So a diagonal entry  $a_{jj}$  of a symmetric matrix cannot be smaller than all the  $\lambda$ 's.

If it were, then  $A - a_{jj}I$  would have positive Eigen values and would be positive definite. But  $A - a_{jj}I$  has a zero on the main diagonal.