Step-1

Consider the following:

$$Bx = \mu x$$
$$(I - A)x = \mu x$$
$$Ix - Ax = \mu x$$

$$x - \lambda x = \mu x$$
$$(1 - \lambda)x = \mu x$$

Thus, $1 - \lambda = \mu$. Therefore, eigenvalue of B is $\boxed{1 - \lambda}$.

Step-2

Suppose the absolute value of eigenvalue of B is less than 1.

Thus, we have $|1 - \lambda| < 1$.

This is same as $|\lambda - 1| < 1$

Step-3

We know the following property of the absolute value function:

$$|x| < a \Rightarrow -a < x < a$$

By using the above property, we get

$$|\lambda - 1| < 1$$
$$-1 < \lambda - 1 < 1$$

Adding 1 through the inequality, we get

$$0 < \lambda < 2$$

Step-4

Thus, if the absolute value of eigenvalue of B is less than 1, the absolute value of the eigenvalue of A must lie between $\boxed{0 \text{ and } 2}$.