Exchange argument vs Lower bound argument

Exchange Argument in Algorithms:

In algorithmic analysis, an exchange argument can be used to **prove the optimality of an algorithm.** The basic idea is to argue that **any assumed optimal solution (algorithm)** can be **transformed** into another solution that **contradicts the optimality of the original.** This exchange helps **demonstrate that the original solution is, in fact, optimal.**

Lower Bound Argument in Algorithms:

The lower bound argument is a technique used to **prove that certain problems or tasks have limitations**, **particularly in terms of time or space complexity**. It aims **to establish a lower limit on the resources (like the number of Machines)** to prove that one algorithm solving the problem must take at least a certain amount of time or space, or the number of Machines like Task Scheduling problem.