Solving MAX CLIQUE using greedy search

Given input graph $G = (V, E)$:

- Order the vertices $v_1, v_2, \ldots, v_n$
- $A := \{v_1\}$
- For $i = 2$ up to n DO:
  - If $A \cup \{v_i\}$ is a clique, then $A := A \cup \{v_i\}$

  Return A

Obviously A is a clique, but it may not be maximum.
This is a fast algorithm, but it may not find an optimal solution.
(Class: show such a graph.)

This is an example of a **greedy algorithm**.