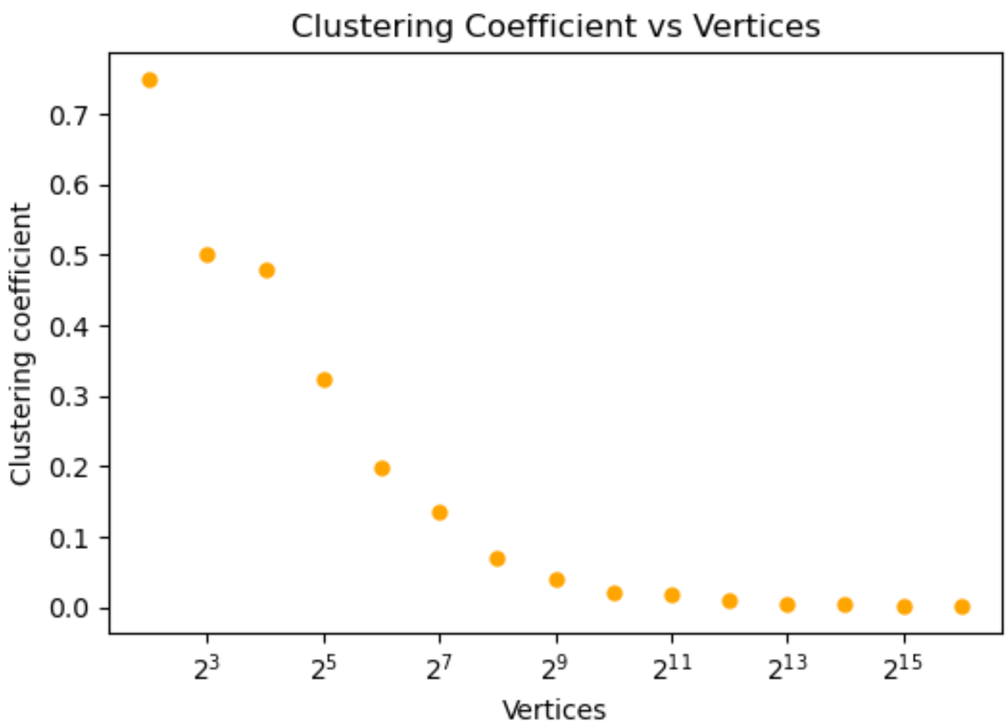
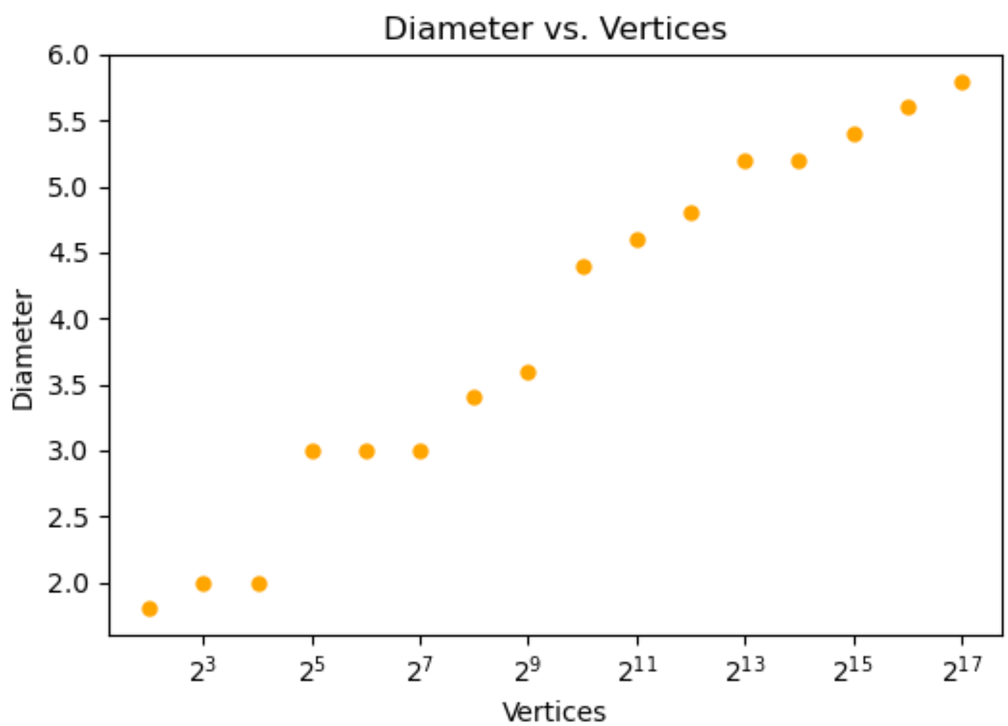
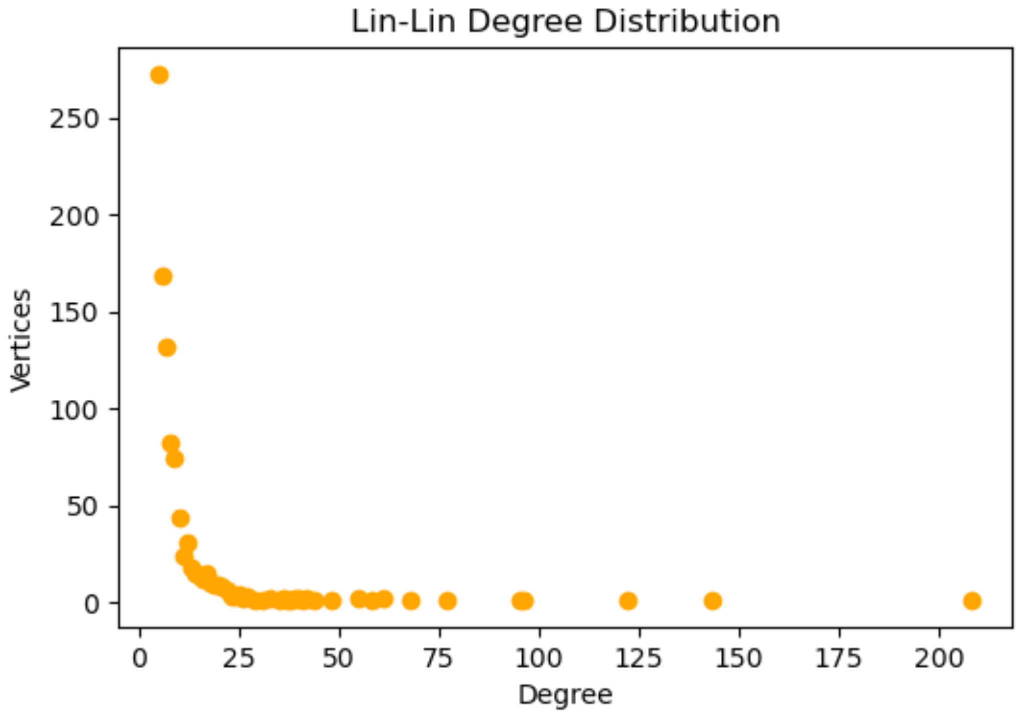


As the values of n grow, the clustering coefficient decreases.

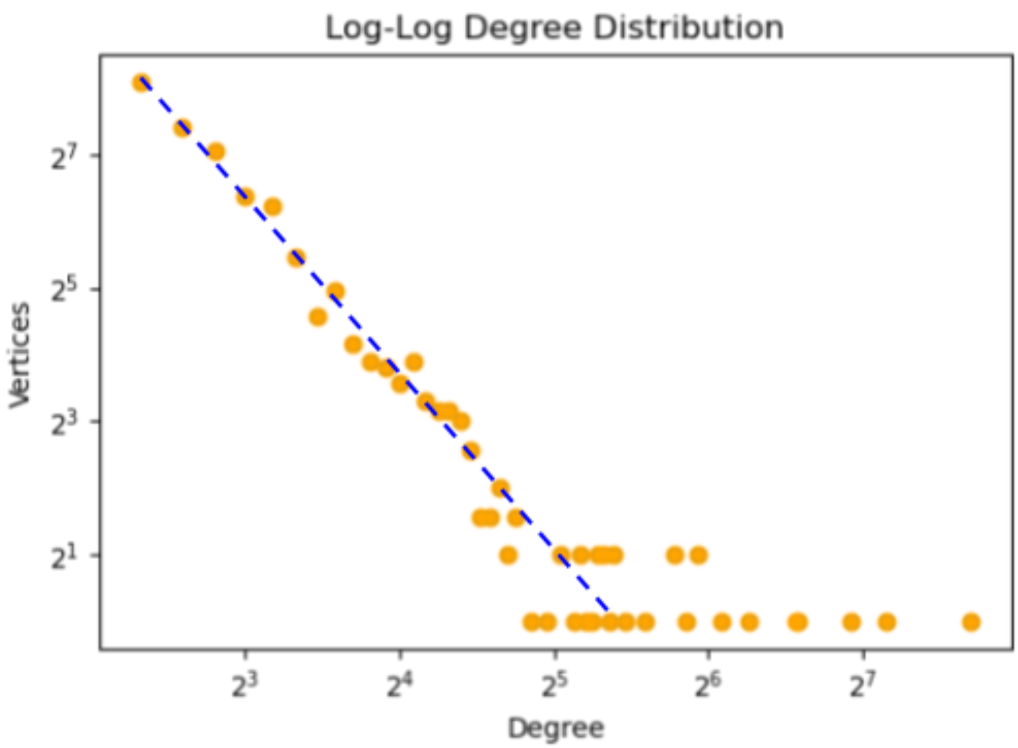


As the value of n gets larger, the diameter increases. The diameter grows approximately proportional to the function log(n).

1,000

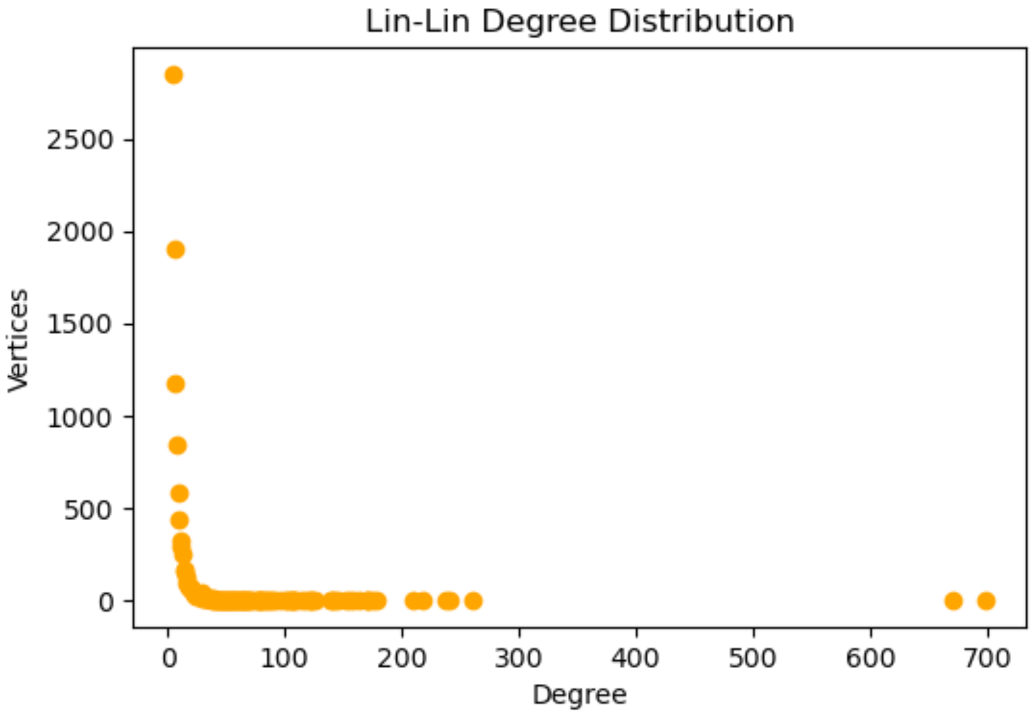


1,000

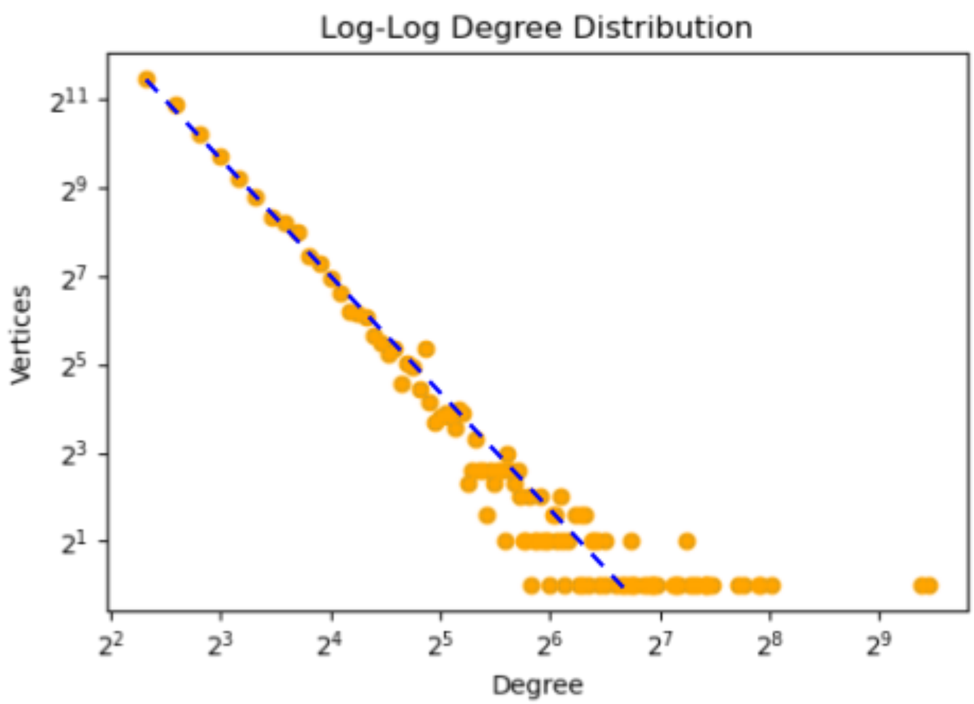


Slope = -1.689305943674819

10,000

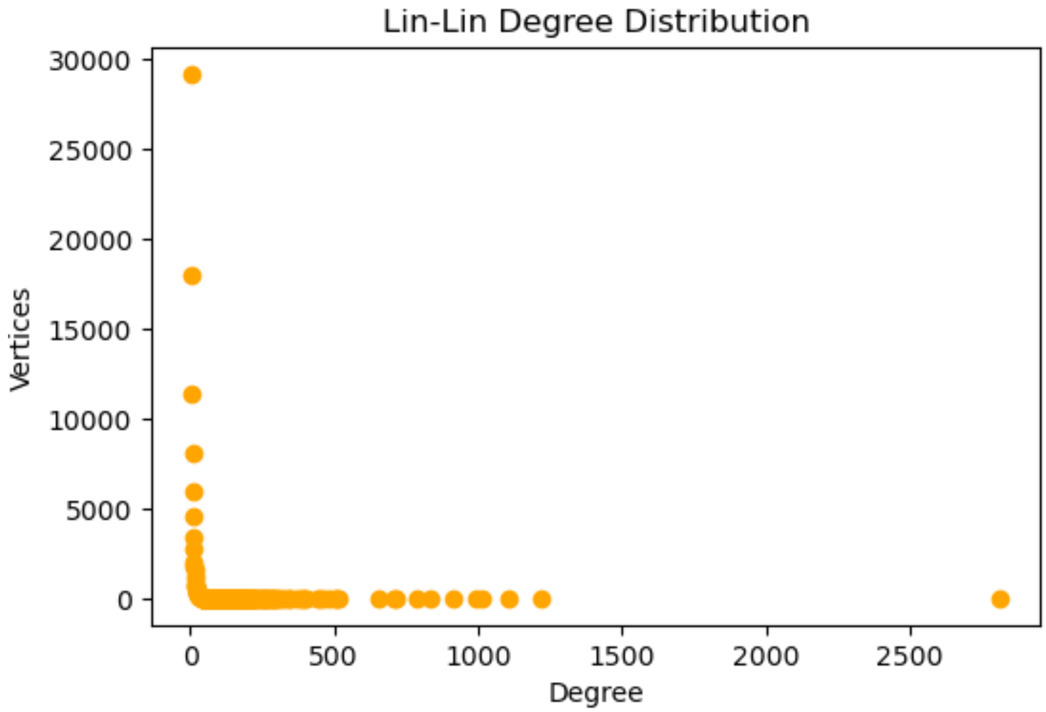


10,000

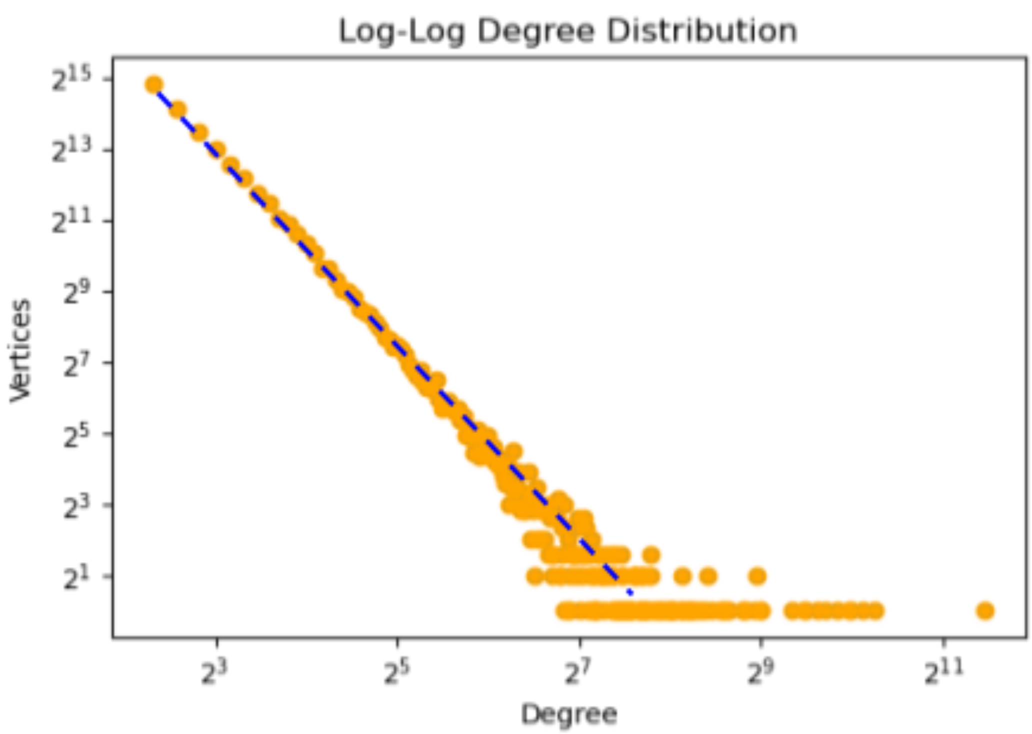


Slope = -1.829472682029582

100,000



100,000



Slope = -2.089412587384367

All degree distributions had power laws with the Barabasi-Albert graphs. It was interesting that all of them after a certain degree dropped to 1 or 2 vertices. The power law on a lin-log graph resulted in a fairly linear log-log plot. As the number of vertices increased between plots, the slope got slightly steeper and steeper to a more negative value.

Psuedo-Code

Barabasi-Albert Algorithm

ALG. 5: preferential attachment
Input: number of vertices n
minimum degree $d \geqslant 1$
Output: scale-free multigraph
$G = (\{0, \ldots, n-1\}, E)$
M: array of length $2nd$
for $v = 0, \ldots, n-1$ **do**
  for $i = 0, \ldots, d-1$ **do**
    $M[2(vd+i)] \leftarrow v$
    draw $r \in \{0, \ldots, 2(vd+i)\}$ uniformly at random
    $M[2(vd+i)+1] \leftarrow M[r]$
$E \leftarrow \emptyset$
for $i = 0, \ldots, nd-1$ **do**
  $E \leftarrow E \cup \{M[2i], M[2i+1]\}$