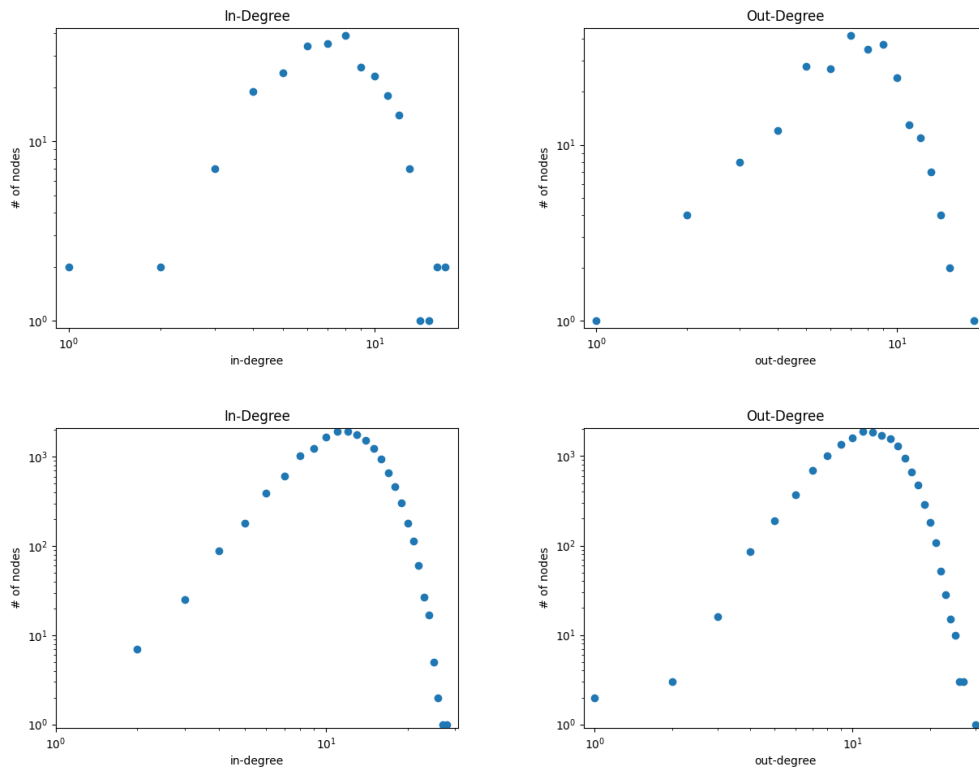


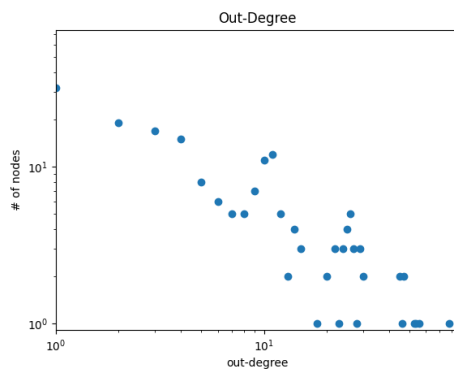
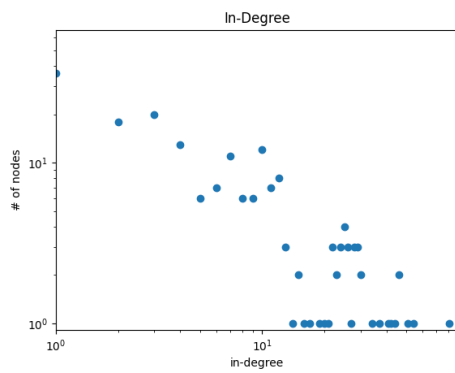
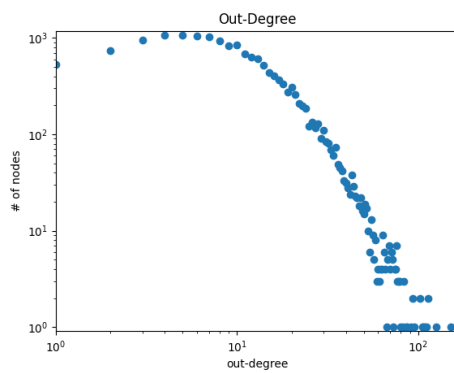
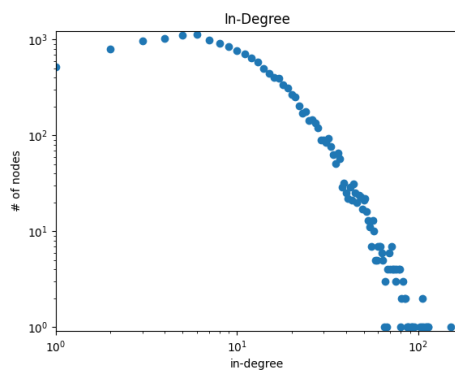
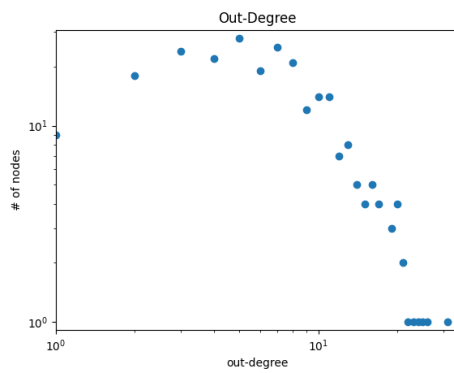
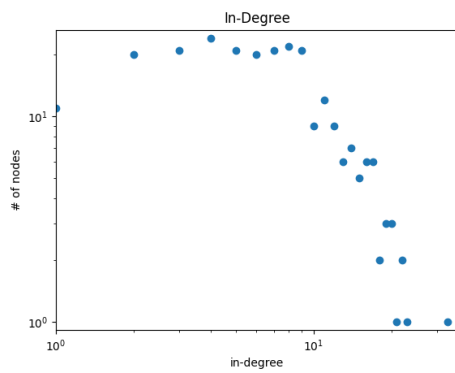
# AI607 Homework 1 Report

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## 1 In-degree and Out-degree





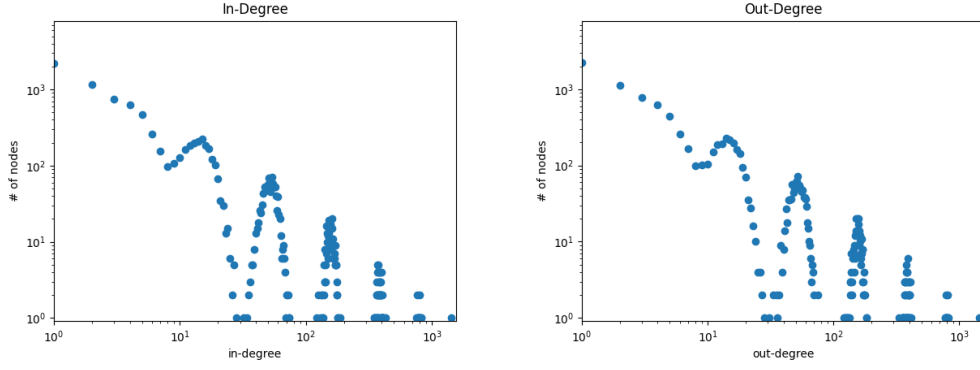
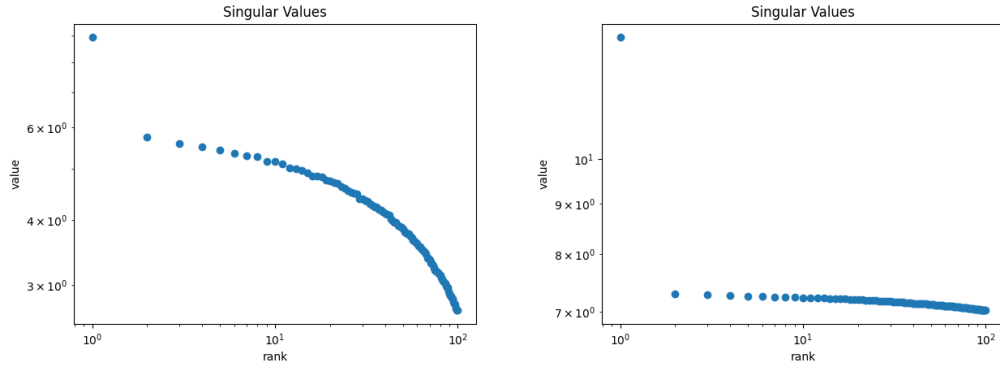


Table 1: Plots of the in- and out- degree distributions of  $G_{1,S}$ ,  $G_{1,L}$ ,  $G_{2,S}$ ,  $G_{2,L}$ ,  $G_{3,S}$  and  $G_{3,L}$  from top to bottom; in-degree plots on the left side and out-degree plots on the right side.

## 2 Singular values



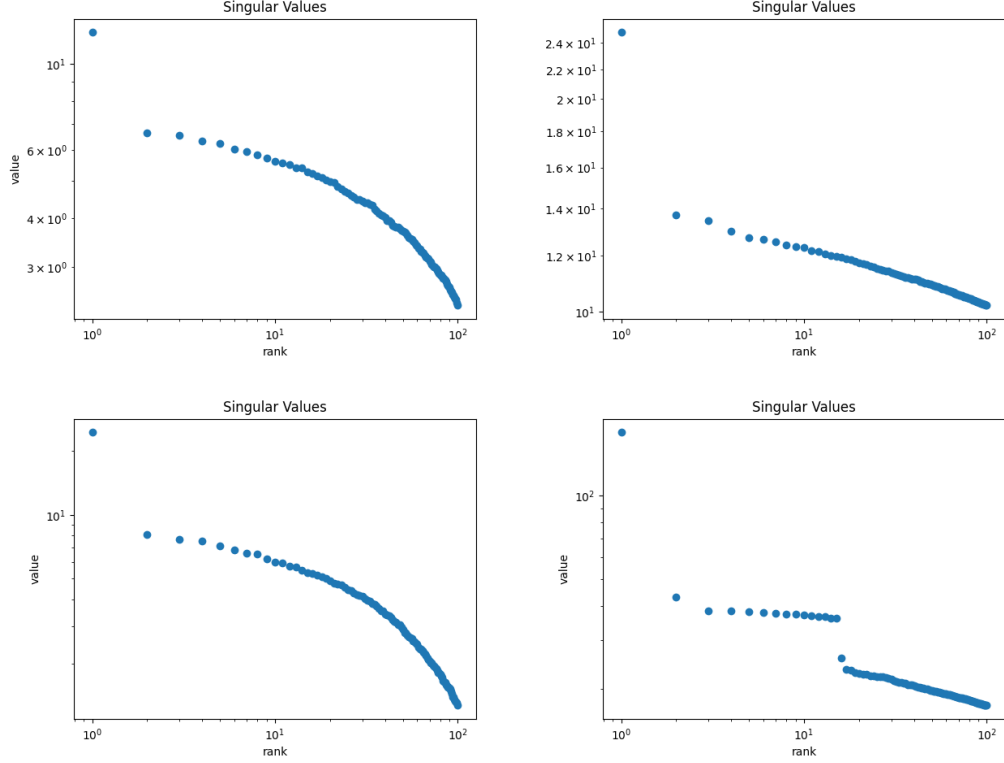


Table 2: Plots of the singular values of  $G_{1,S}$ ,  $G_{1,L}$ ,  $G_{2,S}$ ,  $G_{2,L}$ ,  $G_{3,S}$  and  $G_{3,L}$  from left to right, and from top to bottom

### 3 Analysis

The degree distribution follows binomial distribution for S1 and S2, but not for S3;  $G_{3,S}$  and  $G_{3,L}$  have degree distribution similar to wave form. In S1 and S2, the probabilities  $p_a, p_b, p_c, p_d$  are equal or similar, while they are unequally distributed in S3.