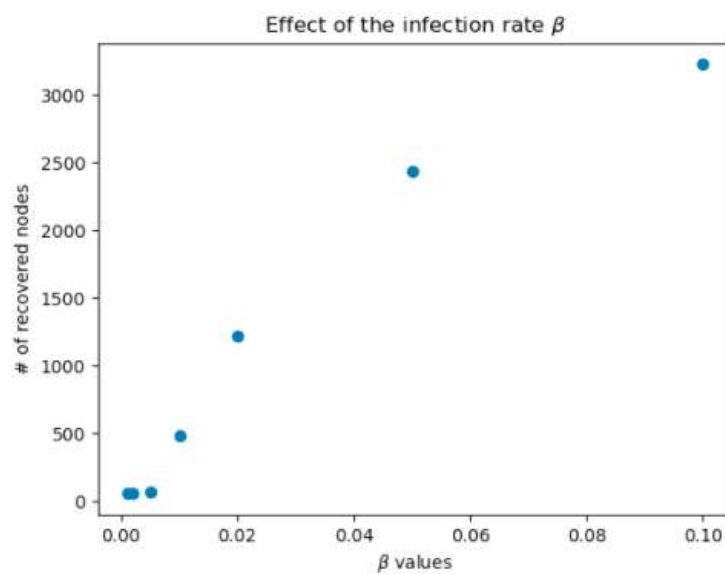


Assignment3

Student ID: 20213207

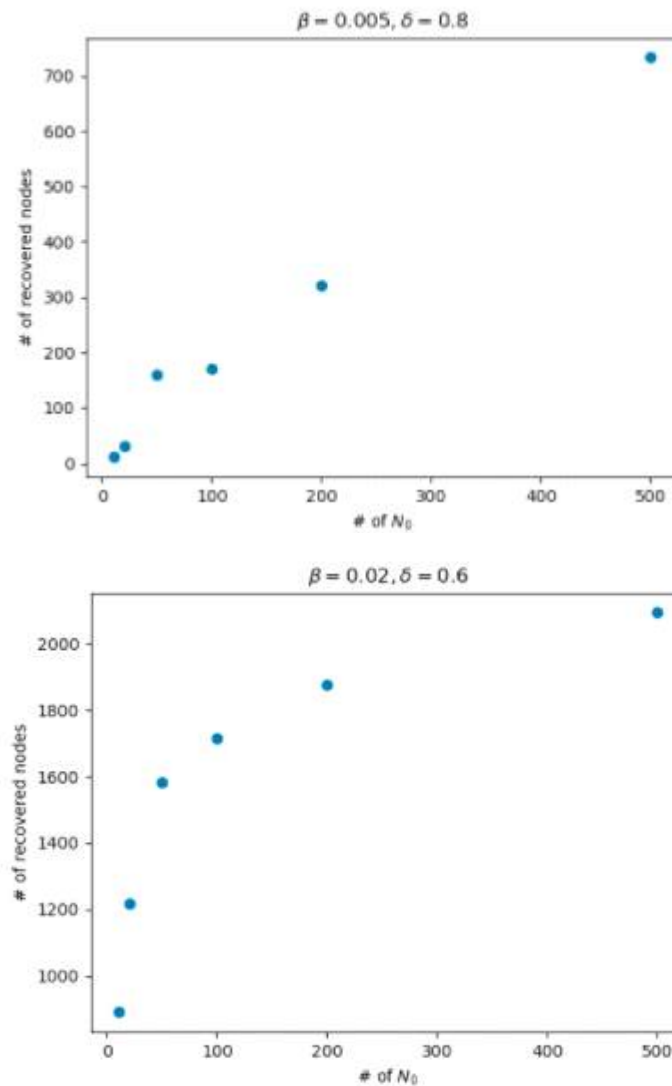
Name: Seungwoo, Ryu

3.1 Effect of the infection rate β



X-axis represents the infection rate, and Y-axis represents the number of the recovered nodes. As we can discover, under the small infection rate such as 0.001, 0.002, and 0.005, because there are not much nodes who become infected, the number of recovered nodes are small, of course. However, as the infection rate increases, for example, $\beta=0.01$, meaning that one person gets infected among 100 people, the number of recovered nodes increases linearly (or sub-linearly) following the increase of β values. Severely, when $\beta=0.1$, meaning that one person gets infected among 10 people, the number of recovered nodes increase dynamically.

3.2 Effect of the number of the initial active nodes N_0



In both cases, as the number of infected initial nodes increase, the number of recovered nodes increase. Is it consistent with the intuition that as the number of infected individuals is large, there are much more probability for the susceptible people be infected, likewise, and the number of recovered also.

In addition, one of the observations is that, although the recovery rate is smaller than the other case, if the infection rate is bigger, then the absolute number of recovered nodes will increase (2100 vs 700).

And the last observation is that, through our observation, under the fixed parameters (β, δ) , as the number of initial infected people increases, the number of recovered nodes will always increase without losing generalization. Of course, there can be difference at convergence speed (or increasing speed) under different parameter settings.