CECS 622 Test #1
Rumors Simulation Project

Read the following story and respond to the questions with the listed requirements and remember that adding your own detailed assumptions and discussions is always needed.

Story:

N students are at a party (N is an even integer $2 \leq N \leq 10{,}000$)
At some point, all students pair off at random and talk for exactly one minute.
At the end of the minute, all students again pair off with another person at random.
One student wants to start a rumor. He spreads the rumor to his conversation partner at noon.
Every person who has knowledge of the rumor obeys these rules:

1. The likelihood of spreading a rumor to another person is 0.5
2. After a person has heard the rumor 2 times, he/she will assume everyone has heard the rumor and will no longer try to spread it further.

Questions:

For N = {100, 1,000, 10,000} run your simulation several times to determine:

1. On average, what % of the attendees will have heard the rumor after 10 minutes?
2. On average, what % of the attendees will have heard the rumor after 20 minutes?
3. On average, what % of the attendees will have heard the rumor after 40 minutes?
4. At what time, t, will 10% of the party have heard the rumor? N = 10,000.
5. At what time, t, will 50% of the party have heard the rumor? N = 10,000.

Requirements:

- Make your assumptions clear.
- Explain your software design at a high level.
- Answer all 5 questions listed above.
- Discuss any overall observations.
- Explain the similarity and differences of this case study with infectious disease modeling.

Notes:

- Deadline is in two weeks (April 2)
- Please start early as programming may require more time than a first glance.