1)
   i) Project: We are building a model using Artificial Intelligence to detect humorous comments in language. Specifically, we are trying to isolate humorous elements from a paragraph of text.

   ii) In order to do this with a waterfall model, we would determine the exact machine learning tools we need beforehand, as well as any natural language processing libraries. We would also create a plan on how exactly to collect data for this model, and how to train this data. We would not be able to deter from this plan, and there will be no room for error. Once we train the model, we would finalize production and test.

   With the agile model, we would identify multiple machine learning tools and NLP libraries, and we would collect a variety of datasets that may pertain to the learning of humor. As we train the model, we may find that a model doesn't work properly, so it's possible that we would switch to a different architecture. As time continues, there would be many sprints, or phases of iterations, that would bring about the best version of that deliverable that it could possibly be. The final product will consist of an AI model trained with data that was experimentally determined to be the best for the task, as well as an architecture that similarly fits the task. Once user testing occurs, more elements would need to be verified and tested, and possibly trained once more.

   iii) In this particular case, agile would be the better solution. Since developing an AI takes a lot of iterative processes, it would be better to experiment, using trial and error, and find the best model for this particular solution.

2)
   i) Functional Requirements:
   - The VR headset will project a 3D ping-pong table.
   - A ping-pong ball will also be projected, for playing with real remote paddles.

   Non-Functional Requirements:
   - The ping pong table will be green, 1 inch thick, 9 feet long, and 5 feet wide.
   - The ball, before serve, will float in the air, and the individual will control the ball's trajectory with their hands during serve.
   - After the serve, the physics emulator will simulate the ball's position.

   ii) System Requirements:
   - The ping-pong table, once activated, will be stationary.
   - The ping-pong ball will, once activated, use the physics emulator to instantaneously update position.

- Sensors will determine the position and velocity of the paddle.

Software Requirements:
- The physics emulator will use a combination of Unity graphics and C backend. The computational updates of the position of the ball will be done in C, and provide instantaneous input to the unity graphics.
- CAD models will be designed in Fusion 360, and will be exported as STL files directly into Unity. Nodes of parameterization will be used to code parameter changes within this STL file before export.
- Ultrasonic, LiDAR, Touch, and Motion sensors will be used to cleanly measure the final values to then use in the C computational engine.

iii) Three stories:
- As a player, I want to visualize the paddle in my hand, the table in front of me, and the ball either next to me or in play.
- As a player, I want to see my opponent clearly, as well as their hand and paddle movements.
- As a spectator, I want to visualize games with clarity, in real time, as it is played in the virtual environment.
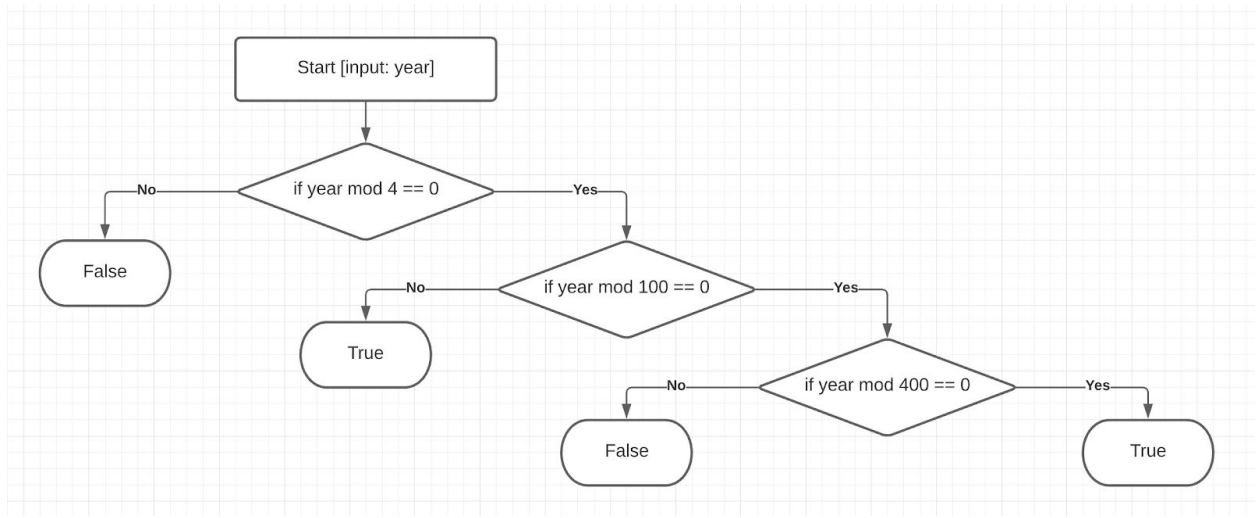
3)

i) As a Scrum Master, I would conduct the development of the Teacher to GTA Assigner application. Each sprint, that would consist of part of the development of this application, whether it was developing the login screen, the student TA interface, the teacher interface, etc. would involve my attention/feedback. I would also make sure that the scrum backlog is updated, and that the team is following scrum protocol.

ii) As a Product Owner, I interact with the Teachers and GTAs, and determine their needs. If an early version of the application is sent out for testing, and if there are any major complaints or issues, I would be the first point of contact. Also, I am responsible for all the user stories, so that we have a clear objective of what the project should head towards, and what all the components are required to do.

iii) As a member of the development team, I am responsible for one particular module of the project, whether it's the GUI, the back-end, or any software component. I, along with the rest of the development team, should cohesively work together to complete a seamless application.

4)

i)

ii) Code attached