1. Please list out changes in the directions of your project if the final project is different from your original proposal (based on your stage 1 proposal submission).
    1. Did not implement favorite games feature for users
    2. Made a more simple UI compared to initial proposal
2. Discuss what you think your application achieved or failed to achieve regarding its usefulness.
    1. I do think that our application has achieved to help the users look for the game they are looking at and make a decision supported by the community's reviews. However, the application is not able to recommend games other than specified parameters. The application could be enriched by a machine learning algorithm to suggest the user games based on their browsing history.
3. Discuss if you changed the schema or source of the data for your application
    1. We did not modify the source of the data for your application.
4. Discuss what you change to your ER diagram and/or your table implementations. What are some differences between the original design and the final design? Why? What do you think is a more suitable design?
    1. We originally thought we would have a region table since we believed the database stored regional data, however, it actually only stored the languages concatenated into a string. We abandoned the region table and instead added languages into the GameInfo table with a lot more information. An interesting issue we found was that when deleting users but keeping some of their reviews, this became an issue with the foreign key and we had to drop the userName as a foreign key in the end.
    2. I think the original diagrams we had sounded more organized on paper, but not all tables ended up actually working out once we wanted to add more complicated features later on.
5. Explain how you think your advanced database programs complement your application.
    1. Through our stored procedure we are able to calculate the average for a game if it had a zero (no rating) in the system by averaging user reviews and their ratings. This helps our application because instead of just seeing a rating of 0 and needing to research the game themselves, the user rating can provide impactful feedback on the game without the user needing to read through all of the reviews to gather their opinion on the game.
    2. The trigger keeps all reviews when a user has made over 5, this is done to keep impactful reviews and users' opinions around even when the user

has deleted their account and left the site. Otherwise, their account and other reviews are deleted never to be seen again.

6. Each team member should describe one technical challenge that the team encountered. This should be sufficiently detailed such that another future team could use this as helpful advice if they were to start a similar project or where to maintain your project.
    1. Divya: A technical challenge we faced was writing a syntax-free stored procedure code. It was difficult to debug based on the error message in the GCP terminal. However, as a group, we were able to resolve the issue by going through the procedure line by line and continuing to test.
    2. Kaan: Another technical challenge we did face was to keep a user signed in and display specific content for that user and label the content produced by the user. How we were able to overcome this was to pass the username to the middleware trough a POST request upon successful login. From there middleware does pass the username trough props to the required pages.
    3. Jennifer: An additional challenge was when we noticed that the database we used utilized the Genre categories in a different way than we expected, through a boolean for pre-determined categories, which made us change our ER diagram for Genre. We needed to create a different table for the genres since there were so many columns. Checking how the information is stored in the database before deciding on function would have helped us avoid this early on.
    4. Michael: A technical challenge was when we were setting up the backend and we were not able to connect to the GCP database which took a lot of debugging and Google searches because we had to manually list the IP addresses that were allowed to connect before we could actually connect.
7. Are there other things that changed comparing the final application with the original proposal?
    1. We made the UI simpler and opted for a simpler design because it was easier to implement. We also didn’t implement favorite games in the user list because we ran out of time.
8. Describe the final division of labor and how well you managed teamwork.
    1. Kaan: Did work on the frontend and middleware ensuring full stack compatibility, and wrote simple queries to ensure functionality like password validation.
    2. Divya: I mainly worked on the front end by creating the general layout of the website and implemented routing functionality. I also created the home page, user review functionality, and implemented the trigger and stored procedure in both the frontend and backend of the React App.

3. Michael: Did most of the backend work with express and connecting GCP with the backend. Worked on some login authentication things too.
4. Jennifer: Did most of the backend SQL management on GCP such as populating and arranging the data and creating tables. I also wrote the advanced queries, stored procedures, and triggers.

9. **/ 10.** Discuss what functionalities you added or removed. Why? / Describe future work that you think, other than the interface, that the application can improve on
    1. A feature we added was to calculate the rating of each game based on either the original game's rating from the Steam game database or the average rating of all the users. We noticed that some games had no rating, so we decided to implement this feature so that all games had some sort of metric for users.
    2. A feature we were not able to implement and would like to in the future is to allow users to favorite games. This would allow users to view their favorite games easily from their profile page and also allow us to customize recommended games.