**Sam Puffer – Team TPK – Final Project Self-Assessment**

For my individual contributions to our senior design project, I focused my efforts on three main areas: database design, simulator development, and expo presentation (including the creating the poster and aiding in booth setup). Working on these tasks built on skills I’ve learned from last semester and throughout my academic career. Especially for designing the database and programming the simulator, I was able to reference source material from past classes to aid in the construction of the project. For the database, I set up the architecture using AWS and SQL Server Management Studio. I was responsible for ensuring the database was reliable, fast, and well-maintained. Our tables were organized by function using schemas, and well-connected via primary and foreign keys. I handled data-insertion for testing and ensured the structure worked for both our front-end website and back-end simulator. Through this experience, I am confident I can use these skills either in future personal projects or in a professional environment.

Using the skeleton code that Brandon provided earlier in the project, I worked extensively in developing the logic of our simulator. I created a model for a player character, and by using production rules, I simulated optimal player choices for D&D combat. Included in the simulator are mechanics and rules unique to D&D, including flanking, advantage/disadvantage on attack rolls depending on situation, and area-of-effect attacks. The combats are run on a grid, whose size is specified by the user when the encounter is made. Therefore, player models make decisions based on distance, proximity to enemies, and range of their attacks. Developing the logic was probably the most rewarding part of this project for me, because I was able to see in real time how the combat simulation evolves by introducing new rules or gameplay systems. I’m also confident in saying that this simulator is accurate to a standard game of D&D (keeping our scope in mind). For code development, I was also responsible in creating our batch processor, which detects a queued batch in our database, and signals our simulator to run. Additionally, I was responsible for designing our project poster for expo. I’m incredibly happy with how the final design looks, and through our success at expo, I can conclude it achieved its goals in being informative, visually appealing, and attracting attention to our booth.

For our project, we achieved our goal of creating a working proof-of-concept prototype D&D combat simulator application. It comprises of a front-end web application, a driving database, and our back-end simulation program. Overall, our group worked incredibly well together, and I have to credit my teammates Nick and Brandon, as they both did fantastic work. Nick was responsible for developing the front-end website. As someone who is unfamiliar with front-end development, he was performing programming witchcraft. He’s the sole reason our project operates as effectively and as cleanly as it currently does. Brandon was responsible for designing the structure of our back-end code as well as assisting Nick in the aesthetic design of our front-end. From my end, Brandon was instrumental in setting up the skeleton of our code. Without his preparation, my job would’ve been significantly harder, and the back-end logic wouldn’t be nearly as structured. The modifications he made to our web page are also amazing, as the website had much less visual flair before he started working on it.

I’m incredibly grateful that I chose to work with both Nick and Brandon, as I believe we work well together. If any of us, myself included, were missing from this project, it simply wouldn’t have come together. Every group member pulled their own weight plus some, and that led to a project that was both successful by my own standards and something that I am incredibly proud of. I learned that in group work, compromises must be made for everything to function well together. That goes for both interconnected technical pieces like the front-end and database, but also people and their own work methodologies. Additionally, great innovations can come out of these compromises to add even more to the final product.