1. What are the most challenging aspect of the coursework task?

The most challenging aspect of the task was navigating the game logic and specific functions that could handle various context. Developing different functions for the win condition checker, managing user input validation, and creating a strategic computer move mechanism required careful thought and precise programming. Also the error handling part was a little difficult to me. To complete the task, I break down the game requirements into modular functions and systematically implemented each component. I focused on creating clean, error-resistant code that could handle different user interactions and game states. I use different functions for a particular task. In addition to that the leaderboard system added another layer of difficulty, requiring careful JSON file handling, error management for potential file corruptions, and maintaining persistent game scores across multiple sessions which make the storing of data in JSON format.

2. How did you go about completing the task?

At first I systematically broke down the project into modular functions, starting with core game mechanics. Each component was developed and tested independently before integration. This approach involved creating separate functions for board initialization, move validation, win, draw and lose game checking, and leaderboard management. Careful attention was paid to error handling, ensuring the game could gracefully manage unexpected user inputs and potential file-related issues. Then I focused into the proper flow if the statement in program which I managed from the main function. Then I take the help if python built in module like random, os.path, json etc. Which help me in the smooth execution of the program.

3. What have you learned over the course of completing this coursework task?

The coursework was more than just coding a game to me, it was a great opportunity for comprehensive learning that helped my technical skills to grow in Python programming. By carefully following the specified requirements and focusing on clean, functional code, I was able to develop a fully functional Noughts and Crosses game that demonstrates key programming principles of python. I also learned advanced techniques in modular programming, file I/O operations with JSON, as well as comprehensive error handling. The project enhanced my skills in creating console applications, managing simple game states. Most importantly, I gained a deeper understanding of how to break down complex programming challenges into manageable, testable components, a skill crucial for python programing.