Q2 Analyse impact of different activation function with adam solver on the model.

A: ReLU (rectified linear unit):

Performance: Achieved 98.61% accuracy on the test set.

Observation: ReLU is a widely used activation function in deep learning due to its simplicity and efficiency in training. It effectively alleviates the vanishing gradient problem, especially in deeper networks. The high accuracy achieved indicates that the model can effectively capture the patterns in the dataset.

Logic (S-shaped):

Performance: Achieved 97.42% accuracy on the test set.

Observations: The sigmoid function is one of the earliest activation functions used. However, it may suffer from the vanishing gradient problem in deeper networks, which may slow down training or lead to poor convergence. In this experiment, it performed slightly worse compared to ReLU and tanh.

Tan:

Performance: Achieved the highest accuracy of 98.75% on the test set.

Observations: Tanh is similar to the sigmoid function, but ranges between -1 and 1, which can be advantageous since it centers the output around 0. This centering can make learning subsequent layers easier. It turns out that tanh is slightly more effective for this particular dataset and model architecture.

Q3 Explain your findings and report the best performance.

A:

Experiments demonstrate the importance of choosing an appropriate activation function for neural networks. While all three activation functions have high accuracy, tanh is slightly more accurate than the others, with an accuracy of 98.75%. However, it is worth noting that the optimal activation function may vary depending on the data set and model architecture. Regular experimentation and validation are critical to optimizing neural network performance.

Quiz:

Your work has been saved and submitted

Attempt Score   **9 / 10 - 90 %**

Overall Grade (Highest Attempt)   **9 / 10 - 90 %**