Module 6: Post Modelling Activities - Assignment

Problem Statement:

Fashion MNIST is a dataset of Zalando's article images, consisting of 60,000 training examples and 10,000 test examples. Each example is a 28x28 grayscale image, associated with a label from 10 classes. The task is to classify these images into an apparel category amongst 10 categories on which the dataset is benchmarked.

Objectives:

Data Preparation and Visualization:

- Load the Fashion MNIST dataset.
- Visualize different samples from the dataset.
- Normalize the pixel values of the images to be between 0 and 1 for better model performance.
- Convert the output labels to categorical format for classification.

Model Building and Training:

Construct a Neural Network using TensorFlow and Keras.

- The model should consist of multiple dense layers with a significant number of neurons.
- Utilize ReLU activation for hidden layers and softmax activation for the output layer.
- Train the model on the prepared dataset.
- Implement callbacks, particularly TensorBoard, to visualize the training process.

Model Evaluation and Analysis:

- Evaluate the model's performance using a validation set.
- Analyze the training process with the help of TensorBoard.
- Save the trained model, including its architecture and learned weights.

Model Loading and Verification:

- Load the saved model and verify its architecture.
- Check the consistency in the number of model parameters and weights.