Assignment: Animal Image Classification using Deep Learning

Objective:
You are tasked with building and evaluating an image classification model to classify animal images (e.g., Cat, Dog, Horse) using a pre-trained deep learning model.

Tasks:

1. **Data Preparation**:
   - Load the animal image dataset.
   - Perform basic preprocessing:
     - Resize all images to **224x224**.
     - Normalize the pixel values to `[0, 1]`.
2. **Model Selection**:
   - Use a pre-trained model (e.g., **MobileNetV2**, **ResNet50**, or **VGG16**) from TensorFlow/Keras.
   - Fine-tune the model for **animal image classification** by replacing the last layer with a **softmax output layer**.
3. **Model Training**:
   - Split the dataset into **training** and **validation** sets (80%-20% split).
   - Train the model for **10 epochs**.
   - Use **accuracy** as the evaluation metric.
4. **Model Evaluation**:
   - Evaluate the trained model on the validation set.
   - Report:
     - Accuracy on the validation set.
     - Confusion Matrix.
5. **Visualization**:
   - Plot the **training and validation accuracy/loss** over the epochs.
   - Display a few **misclassified images** with their predicted and true labels.

Submission Requirements:

- Submit a **Python script** or **Jupyter Notebook** containing:
  - Code for each task.
  - Final evaluation results and visualizations.

Bonus Task (Optional):

- Perform **data augmentation** (e.g., rotation, flipping, zoom) to improve model performance.