Problem Statement Document

Title:
Classification of CIFAR-100 Images Using Deep Learning

Introduction:
The CIFAR-100 dataset consists of 60,000 32x32 color images in 100 different classes, with 600 images per class. The dataset is used widely for image classification tasks in computer vision, making it an ideal choice for developing and testing deep learning models.

Objective:
The objective of this project is to design and implement a deep learning model to classify images from the CIFAR-100 dataset into their respective categories. This involves setting up a Python development environment, downloading the CIFAR-100 dataset, and performing data exploration to understand the data.

Scope of Work:

1. **Development Environment Setup:**
    - Install necessary libraries, such as TensorFlow or PyTorch, for building deep learning models.
    - Ensure a suitable environment with Python installed and configured.
2. **Data Download and Exploration:**
    - Download CIFAR-100 directly through libraries or manually, then load it into Python.
    - Explore the data by examining its shape, class distribution, and sample images.

Success Criteria:
The project's success in this phase is determined by the successful setup of the development environment, loading, and verifying the CIFAR-100 dataset, and generating an initial data exploration report that provides insights into data characteristics, potential preprocessing steps, and challenges.