Programming Assignment: Model Implementation and Training Handler

This assignment focuses on implementing key parts of a base model and training handler in PyTorch. You will complete designated TODO sections within two files: `base\_model.py` and `handler.py`. This will involve defining components of a neural network model and implementing functions responsible for saving and evaluating the model during the training process.

# Instructions

## 1. `base\_model.py`

In `base\_model.py`, you will implement portions of the `GLU` and `StockBlockLayer` classes. Follow the TODO comments provided in the code to complete each method as described below.

* \*\*GLU Class\*\*:

1. `\_\_init\_\_` method:  
 - TODO: Implement this method by initializing `linear\_left` and `linear\_right` layers. Both layers should take `input\_channel` and `output\_channel` as parameters.

2. `forward` method:  
 - TODO: Complete this method by implementing the multiplication of `linear\_left(x)` with the sigmoid of `linear\_right(x)`.

* \*\*StockBlockLayer Class\*\*:

1. `\_\_init\_\_` method:  
 - TODO: Initialize attributes like `time\_step`, `unit`, and `multi\_layer` to configure the block layer.

2. `forward` method:  
 - TODO: Implement the forward pass for the block layer using appropriate operations, such as convolutional or recurrent layers.

## 2. `handler.py`

In `handler.py`, you will implement parts of the model saving and evaluation process. Follow the TODO comments within the code to complete the necessary functions.

* \*\*Model Saving\*\*:

1. `save\_model` function:  
 - TODO: Implement this function to save the model parameters. Ensure it checks if `model\_dir` exists and creates it if necessary.

2. `save\_model` function:  
 - TODO: Modify this function to accept an optional `epoch` parameter to label saves by epoch.

* \*\*Evaluation Metrics\*\*:

1. Model evaluation method:  
 - TODO: Define the evaluation method by implementing calculations for metrics such as Mean Squared Error (MSE) or accuracy for model predictions.

2. Model evaluation method:  
 - TODO: Ensure the evaluation process logs results to keep track of performance across epochs.