1. Augmentation + Regularization:

- o **Performance**: Achieved the highest accuracy and lowest loss among all experiments, indicating that combining data augmentation with regularization significantly improves model performance.
- **Trend**: Accuracy quickly reaches near 1.0, and loss stabilizes at a very low value. The model converges well without signs of overfitting.

2. Regularization Only:

- o **Performance**: Accuracy is high but slightly lower compared to augmentation + regularization. Loss is slightly higher as well.
- **Trend**: Regularization alone improves the model's performance to some extent, but the lack of data augmentation limits its generalization ability.

3. Original (No Augmentation, No Regularization):

- o **Performance**: Displays the worst performance, with lower accuracy and higher loss. The model struggles with overfitting and lacks generalization.
- **Trend**: Accuracy increases slower, and the final loss is relatively higher, indicating the model cannot fully learn robust features without augmentation or regularization.

4. Augmentation Only:

- o **Performance**: Performs better than regularization alone but slightly worse than combining augmentation with regularization. The accuracy is high, and the loss decreases effectively.
- **Trend**: Data augmentation improves generalization, but the lack of regularization leaves room for further improvement.

Conclusion:

- The **combination of augmentation and regularization** delivers the best performance, enabling the model to generalize better while avoiding overfitting.
- Augmentation alone helps generalization more than regularization alone.
- Without augmentation or regularization, the model performs poorly and struggles to learn effectively.