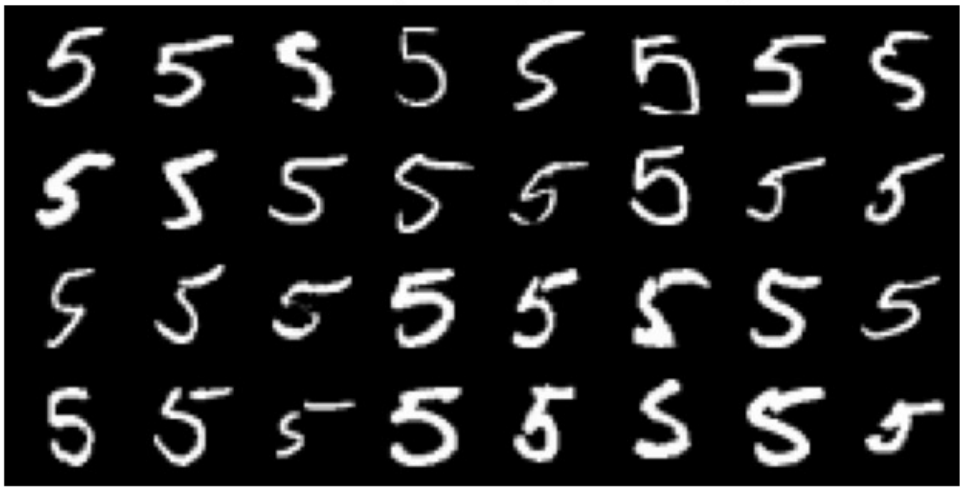
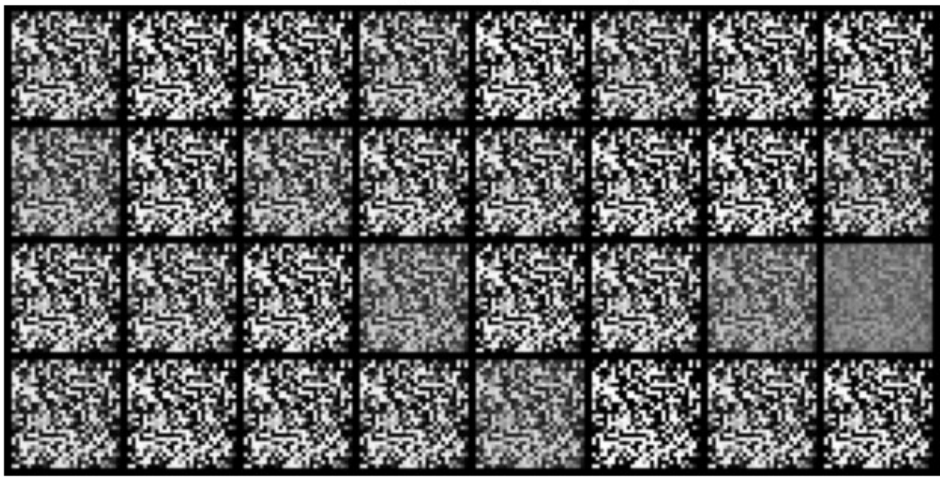
Lab 9

Results:

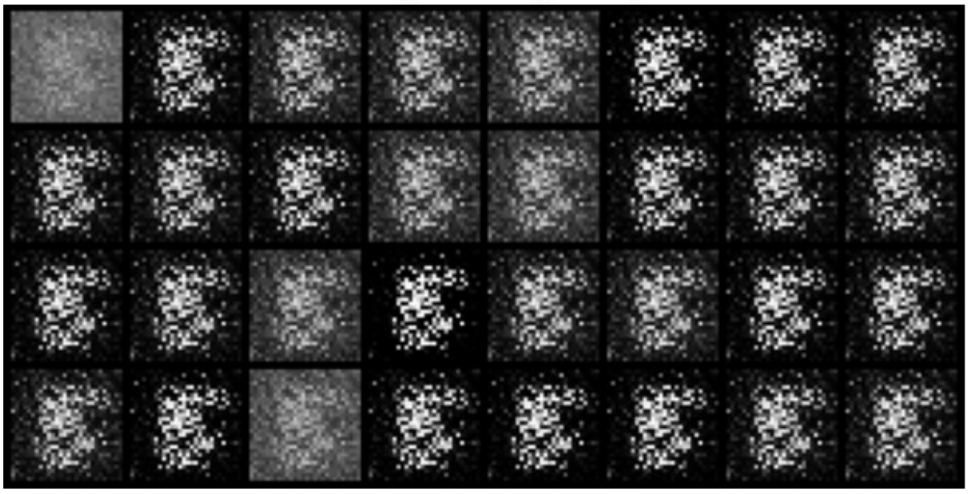
Real MNIST Digit '5' Only (Before Training)

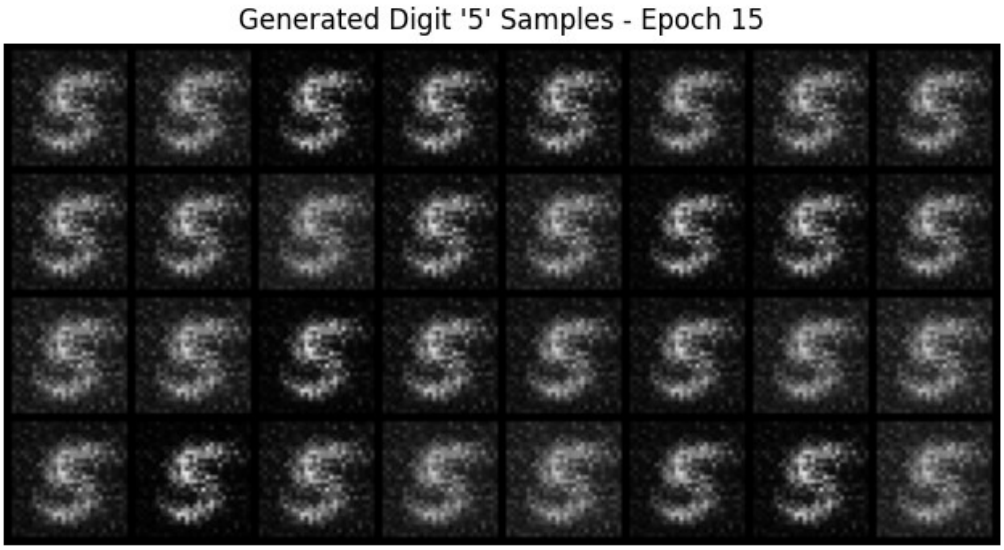


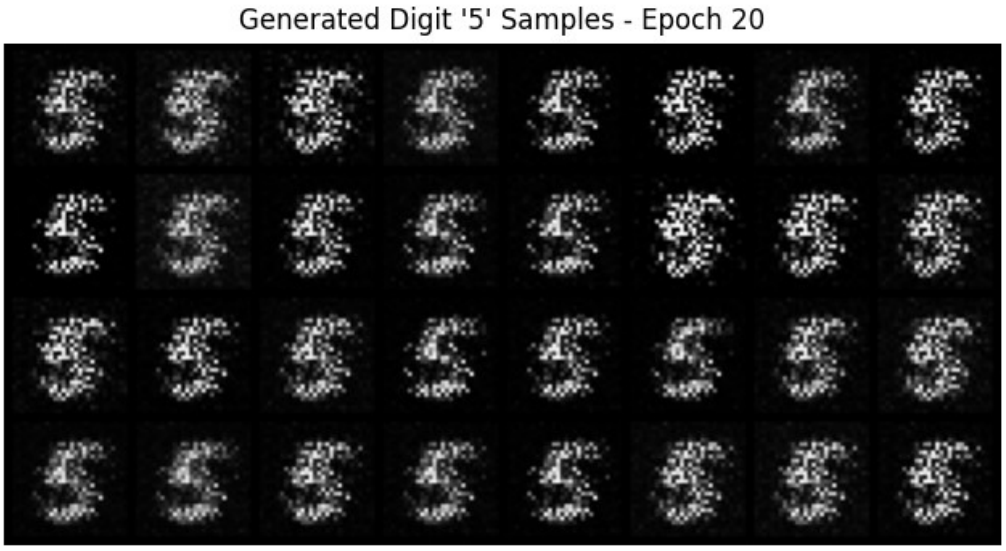
Generated Digit '5' Samples - Epoch 5



Generated Digit '5' Samples - Epoch 10







QA:

Discriminator Loss (D loss)
Epoch 1–3: Very small

This means that the discriminator can easily distinguish between real and fake numbers, and the generator has not yet learned how to produce believable numbers.

Mid-term (Epoch 4–12): Increased volatility

This means that the generator starts to produce images that are "more like" numbers, making it more difficult for the discriminator to distinguish them.

Late stage (Epoch 16): D loss is as high as 1.0710

At this point, the generator is likely to produce high-quality fake images, confusing or overfitting the discriminator.

📈 Generator Loss (G loss)
Overall variation range: about 5 to 14

The larger the G loss is, the harder the generator tries to deceive the discriminator (that is, the less real the image is), and the smaller the G loss is, the more successful the generator is.

The peak period occurs at:

Epoch 6 (14.66) and Epoch 7 (12.83): This may be the stage where the generator significantly adjusts parameters.

However, the training did not crash and stabilized afterwards, indicating that the model has the ability to learn.