Ex.no:1 **GAN MODEL**
Date:23/12/2024

AIM:

To train a DCGAN that generates images of MNIST dataset and classify them as real/generated using a discriminator.

DATASET DESCRIPTION:

Data Type: Grayscale images of digits.
Image Size: Each image is 28×2828 \times 2828×28 pixels.
Number of Classes: 10 (digits 0 through 9).
Number of Samples:

- Training set: 60,000 images.
- Test set: 10,000 images.

TECHNIQUES USED:

- ***MODEL:*** Deep Convolutional Generative Network(DCGAN)
- ***GENERATOR:***

  upsampling:tf.keras.layers.Conv2DTranspose

  Activation : LeakyReLU except output [tanh]
- ***DISCRIMINATOR:***

  CNN- Based image classifier

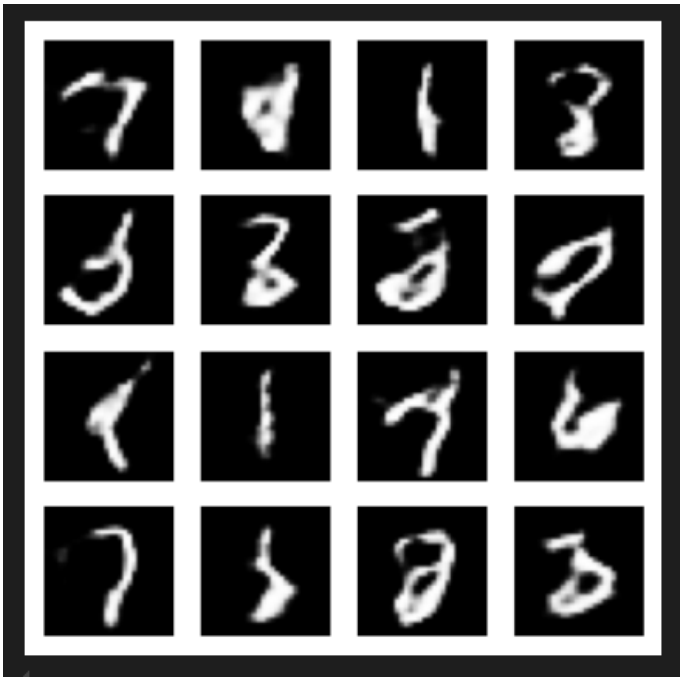
  Activation- LeakyReLU
- ***LOSS AND OPTIMIZERS:***

  Loss- BinaryCrossentropy

  Total loss - fake_loss + real_loss

  Optimizer = ADAM

OUTPUT:



INFERENCE:

Generator_loss at epoch 50 : 0.9695

Discriminator_loss at epoch 50: 1.1434