2ND EXERCISE SESSION

Exercise 1:

1. What is overfitting?
2. Explain how we can determine the best number of training iterations to avoid overfitting.
3. What are the methods used to prevent a neural network from overfitting?
4. Is it possible to represent a XOR Boolean function with a single layer perceptron? Why/Why not?
5. What is the advantage of multi-layer neural networks over single layer neural networks?

Exercise 2: A single layer Neural Network Implementation

Following the **lecture 3**, we want to implement a single layer neural network (Perceptron) to represent the following Boolean functions: AND, OR, NOR (NOT OR)

a) Generate input and output (X and y) samples for each Boolean function (4 samples for each function)
b) Implement a single layer neural network as in the lecture slides (page 8) (2 inputs and 1 output)
    1. Implement the feedforward operations
    2. implement the backpropagation using gradient descent algorithm
c) Train and test the neural network
d) Print the results