In [ ]:

```python
from FFNN import FFNN
from sklearn import datasets
from sklearn.neural_network import MLPClassifier
import random
import numpy as np
iris = datasets.load_iris()
x = iris.data.tolist()  # we only take the first two features.

y = iris.target

target = []
for i in range(len(y)):
    if (y[i] == 0):
        target.append([1,0,0])
    elif(y[i] == 1):
        target.append([0,1,0])
    else:
        target.append([0,0,1])

# data = []
# for i in range(len(x)):
#     data.append((x[i],target[i]))

# random.shuffle(data)
# x = []
# target = []
# for (a,b) in data:
#     x.append(a)
#     target.append(b)
```

In [ ]:

```python
ffnn = FFNN("../model/IrisModel4.txt")
ffnn.printModel()
print(ffnn.predict([5.1, 3.5, 1.4, 0.2]))
ffnn.setBackwardParameter(target, 0.1)
ffnn.backward(1, 0.1, 1000, x)
# print(x)
```

```
Layer 1:
Fungsi Aktivasi:  linear
Neuron 1: [0.1, 0.1, 0.1, 0.1, 0.1]
Neuron 2: [0.1, 0.1, 0.1, 0.1, 0.1]
Layer 2:
Fungsi Aktivasi:  linear
Neuron 1: [1.0, 1.0, 1.0]
Neuron 2: [1.0, 1.0, 1.0]
Neuron 3: [1.0, 1.0, 1.0]
Layer 3:
Fungsi Aktivasi:  softmax
Neuron 1: [1.0, 1.0, 1.0, 0.5]
Neuron 2: [1.0, 0.5, 0.5, 0.5]
Neuron 3: [1.0, 0.5, 0.5, 1.0]
[0.8083665327062594, 0.031658782088439814, 0.15997468520530084]
Layer 1:
Fungsi Aktivasi:  linear
Neuron 1: [0.02286998804827396, -0.21073758365443765, -0.01462371097485473, -1.1986688520280382, -0.6007971767590292]
Neuron 2: [0.20580870268621562, 0.9966961622915502, 0.5768351874302214, -0.30990620905985766, -0.34795633920263863]
Layer 2:
Fungsi Aktivasi:  linear
Neuron 1: [1.5893870929800378, 2.7080349248252755, 2.606901446097535]
Neuron 2: [-1.3366036960903271, -2.418283870044538, 0.3762439128185482]
Neuron 3: [-0.08960274400814736, 0.7770331242184626, -3.452091833742927]
Layer 3:
Fungsi Aktivasi:  softmax
Neuron 1: [2.2397254716180823, 57.70407526217318, -21.192466973488717, -19.461895226337568]
Neuron 2: [4.704182969160311, 25.47726696696934, -32.330697274536526, -30.62360343881536]
Neuron 3: [-3.943908440783276, -81.1813422291427, 55.52316424802533, 52.085498665152805]
iter:  1000
error:  404.3623646617326
```

In [ ]:

```python
#Set classifier
clf = MLPClassifier(solver='adam', alpha=1e-5,hidden_layer_sizes=(5, ), random_state=1, max_iter=1000, batch_size= 1, learning_rate_init=0.1)
#Keterangan Parameter :
# solver "adam" untuk gradient descent
# hidden layer sizes sebesar 5
# max_iter, iterasi maksimum 1000
# batch_size, besar batch 10
# learning_rate_init, learning rate

# clf.fit(X, y)
clf.fit(x, target)

# clf.predict([[5.4, 3.9, 1.7, 0.4],[6.5, 3. , 5.2, 2. ]])
clfResult = clf.predict(x)
```

In [ ]:

```python
ffnn.printModel()
count = 0
for i in range(len(x)):
    pred = np.round(np.array(ffnn.predict(x[i]))).tolist()
    print("IrisModel: ", pred, "Sklearn: ",clfResult[i], "target: ", target[i])
    if (pred == target[i]):
        count+=1
print("IrisModel Correct count", count)
```

```
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IrisModel Correct count 145
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