LAPORAN PRAKTIKUM UTS 2
KECERDASAN BUATAN
NEURAL NETWORKS

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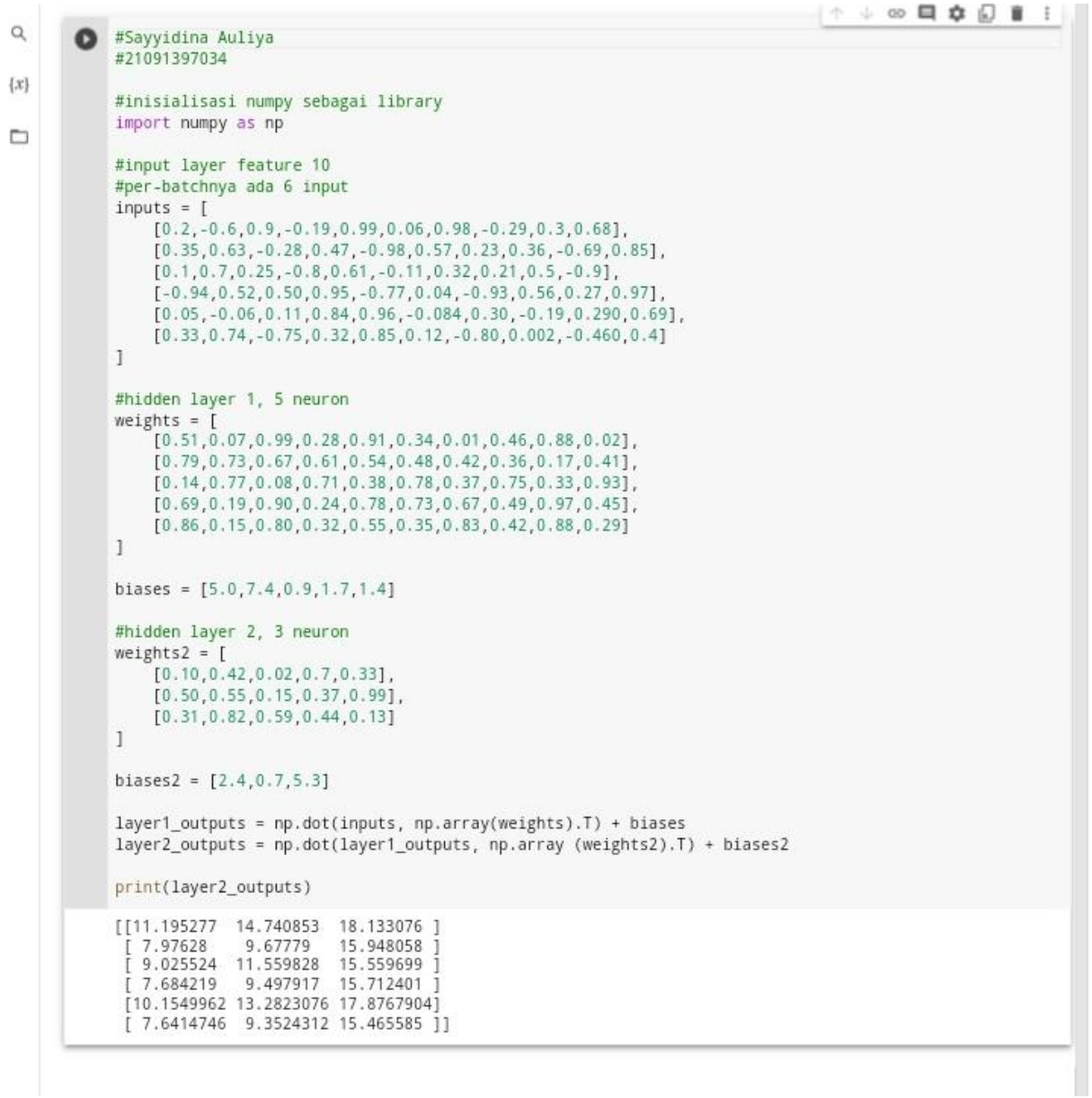
A. SOURCE CODE

1. Multi Neuron Batch Input



```
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#inisialisasi numpy sebagai library
import numpy as np

#input layer feature 10
#per-batchnya ada 6 input
inputs = [
    [0.2,-0.6,0.9,-0.19,0.99,0.06,0.98,-0.29,0.3,0.68],
    [0.35,0.63,-0.28,0.47,-0.98,0.57,0.23,0.36,-0.69,0.85],
    [0.1,0.7,0.25,-0.8,0.61,-0.11,0.32,0.21,0.5,-0.9],
    [-0.94,0.52,0.50,0.95,-0.77,0.04,-0.93,0.56,0.27,0.97],
    [0.05,-0.06,0.11,0.84,0.96,-0.084,0.30,-0.19,0.290,0.69],
    [0.33,0.74,-0.75,0.32,0.85,0.12,-0.80,0.002,-0.460,0.4]
]

#hidden layer 1, 5 neuron
weights = [
    [0.51,0.07,0.99,0.28,0.91,0.34,0.01,0.46,0.88,0.02],
    [0.79,0.73,0.67,0.61,0.54,0.48,0.42,0.36,0.17,0.41],
    [0.14,0.77,0.08,0.71,0.38,0.78,0.37,0.75,0.33,0.93],
    [0.69,0.19,0.90,0.24,0.78,0.73,0.67,0.49,0.97,0.45],
    [0.86,0.15,0.80,0.32,0.55,0.35,0.83,0.42,0.88,0.29]
]

biases = [5.0,7.4,0.9,1.7,1.4]

#hidden layer 2, 3 neuron
weights2 = [
    [0.10,0.42,0.02,0.7,0.33],
    [0.50,0.55,0.15,0.37,0.99],
    [0.31,0.82,0.59,0.44,0.13]
]

biases2 = [2.4,0.7,5.3]

layer1_outputs = np.dot(inputs, np.array(weights).T) + biases
layer2_outputs = np.dot(layer1_outputs, np.array (weights2).T) + biases2

print(layer2_outputs)
```

```
[[11.195277  14.740853  18.133076 ]
 [ 7.97628    9.67779   15.948058 ]
 [ 9.025524  11.559828  15.559699 ]
 [ 7.684219   9.497917  15.712401 ]
 [10.1549962 13.2823076 17.8767904]
 [ 7.6414746  9.3524312 15.465585 ]]
```

Pengerjaan :

- import numpy sebagai library python
- setiap neuron memiliki koneksi yang unik ke setiap neuron sebelumnya, yang outputnya menjadi neuron yang inputnya kita kodekan. Dan hanya perlu membuat beberapa angka sebagai input (disini inputnya 10)
- kita memodelkan 6 input per batchnya, jadi kita buat nilai input sebanyak 6 kali dengan jumlah input 10 di setiap set nya
- kemudian kita masukkan nilai bobot atau weightnya di layer 1 sebanyak 5, karena 5 neuron. Dan nilai biases dari layer 1
- kita masukkan kemudian layer 2 (weights 2, biases 2) weight ada 3 set karena layer 2 ada 3 neuron, begitu pula dengan nilai biasnya
- kemudian untuk membentuk neuron dan menampilkan hasilnya kita tambahkan layer1_outputs, layer2_outputs, dan prints(layer2_outputs)

B. CARA KERJA (DOT PRODUK, PENAMBAHAN BIAS)

Dot produk ini kita menambahkan bias atau semacamnya, jadi sekarang weights dan input akan menjadi matriks yang nantinya, dot produk mencoba mengambil nilai ini (weights) dikalikan dengan nilai (inputs)