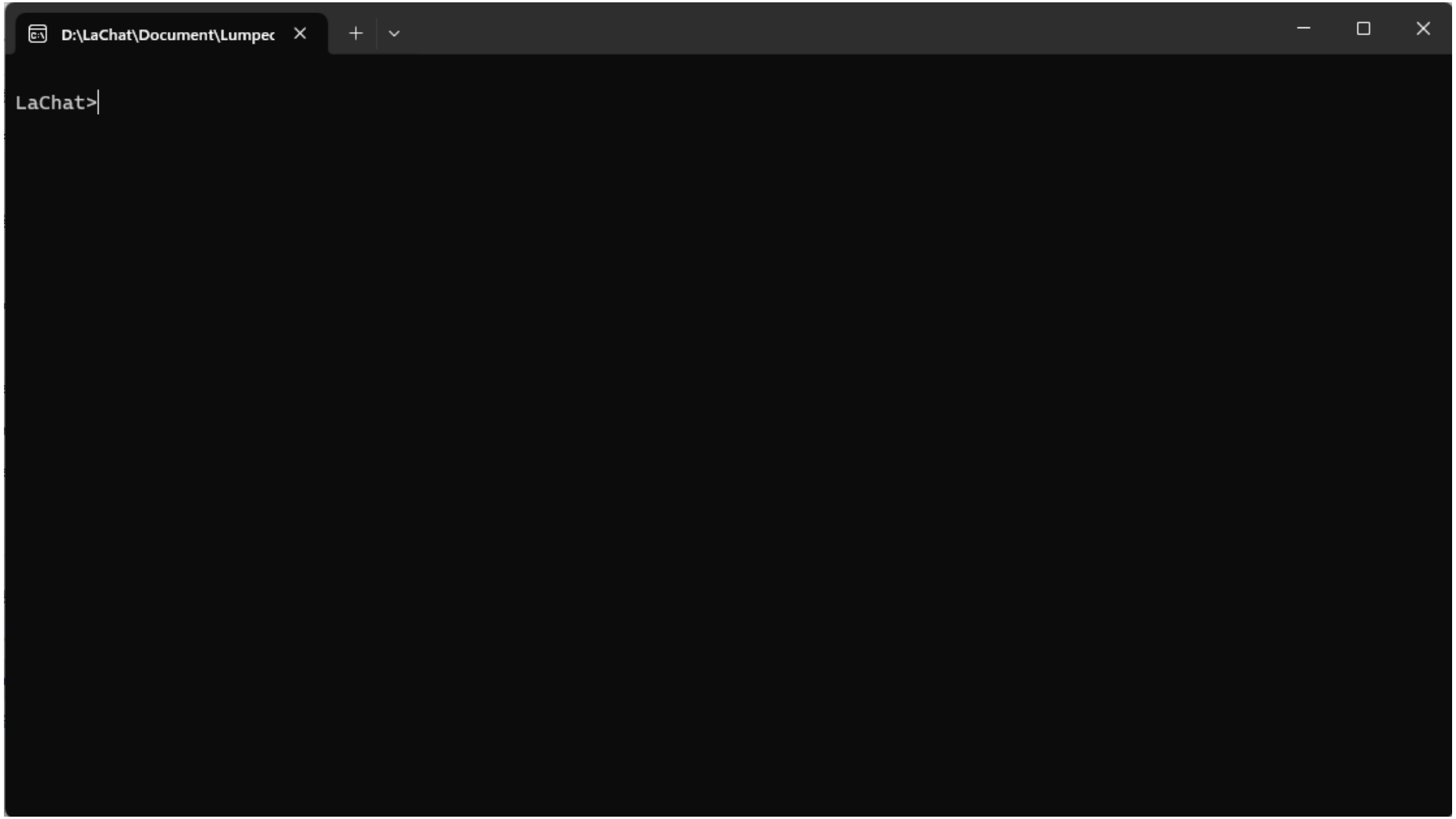
Lumped Deep Learning

2024/5/12

Wei-Hua Chieng
Professor
NYCU, ME

Execute ../bin/Lachat.exe (Console Mode)

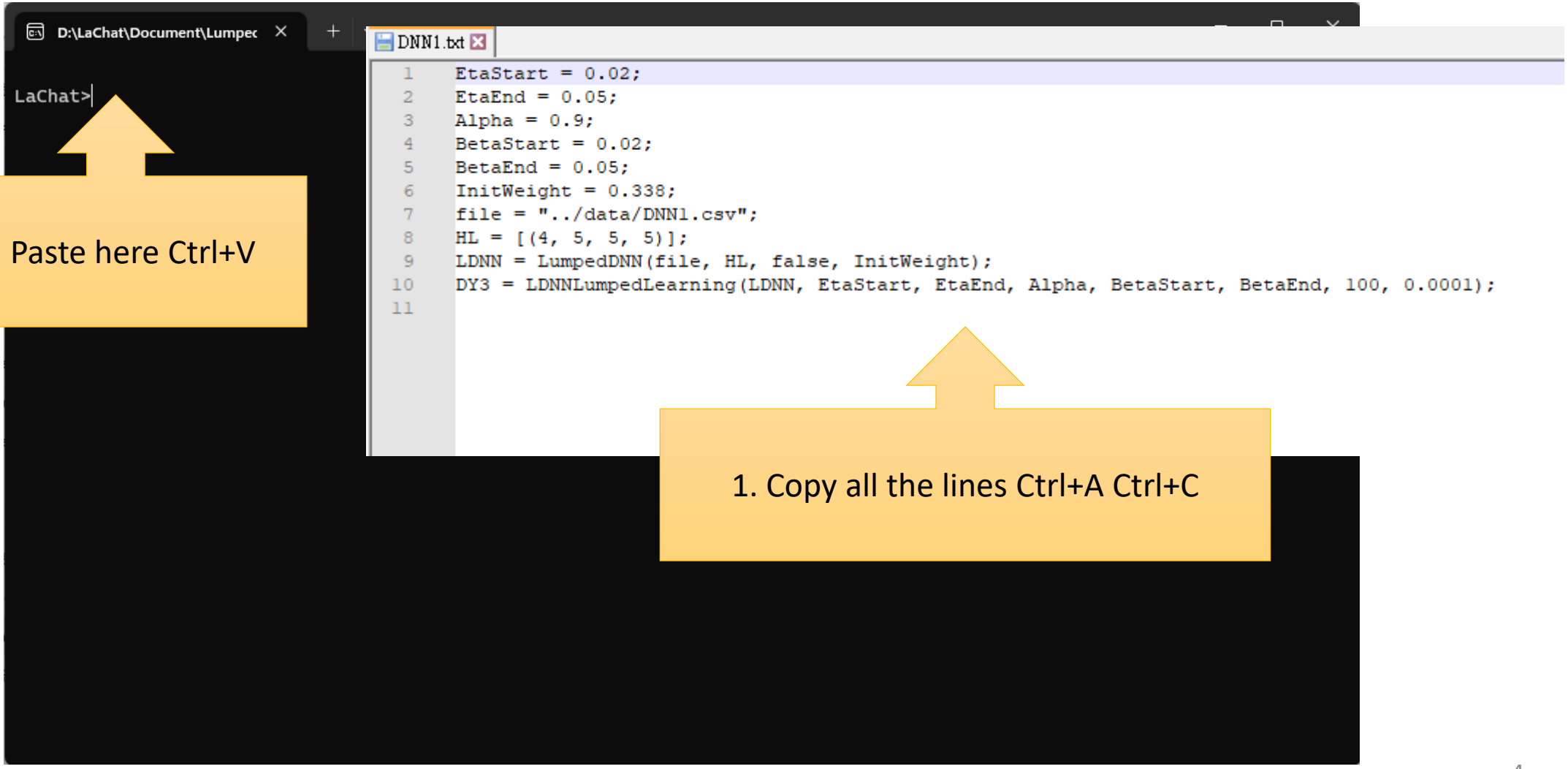


DNN1
../data/DNN1.txt

DNN1.txt

```
1   EtaStart = 0.02;
2   EtaEnd = 0.05;
3   Alpha = 0.9;
4   BetaStart = 0.02;
5   BetaEnd = 0.05;
6   InitWeight = 0.338;
7   file = "../data/DNN1.csv";
8   HL = [(4, 5, 5, 5)];
9   LDNN = LumpedDNN(file, HL, false, InitWeight);
10  DY3 = LDNNLumpedLearning(LDNN, EtaStart, EtaEnd, Alpha, BetaStart, BetaEnd, 100, 0.0001);
11
```

Execute Lachat.exe (Verification)



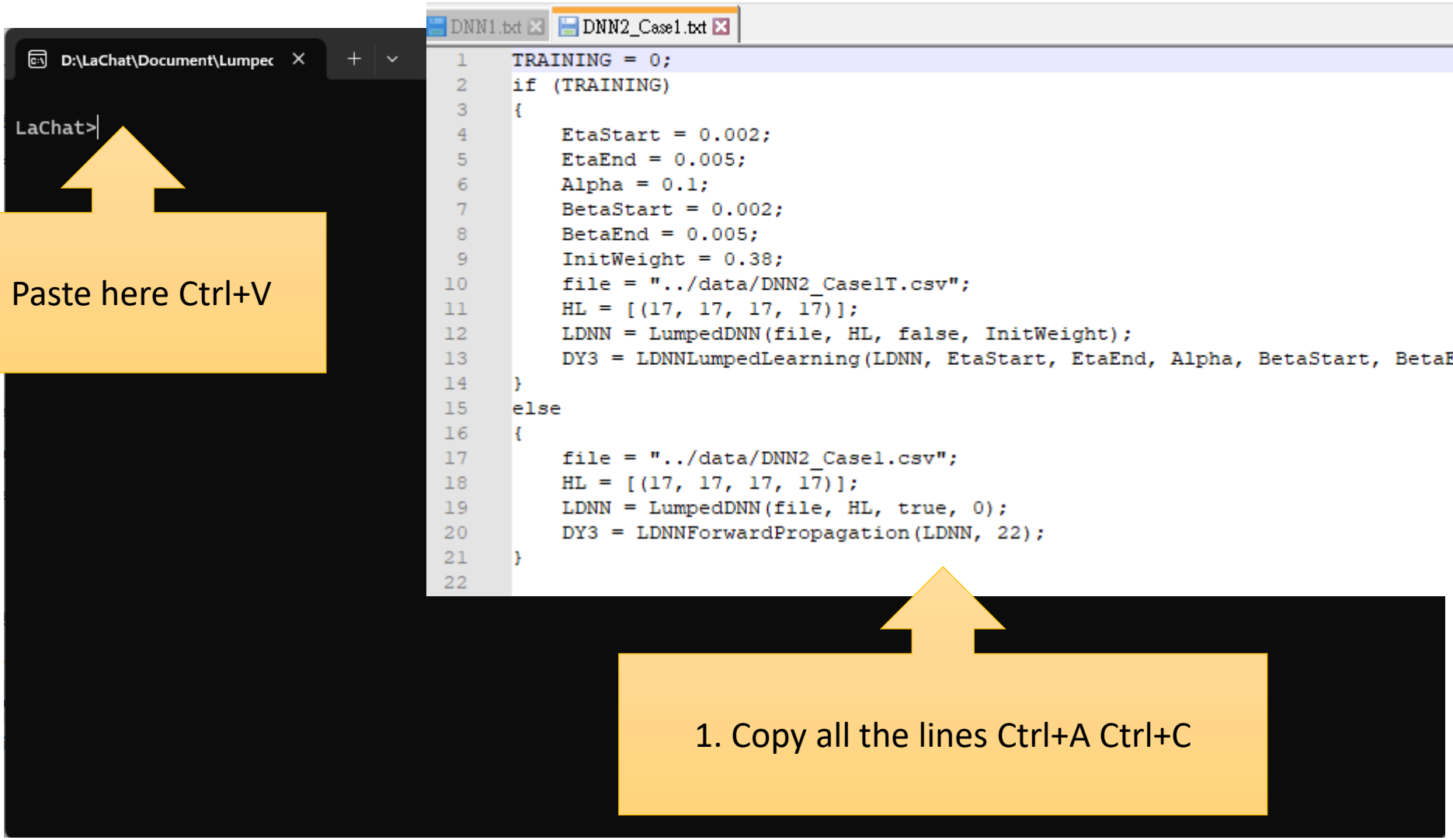
Case 1
../data/DNN2_Case1.txt

DNN1.txt | DNN2_Case1.txt

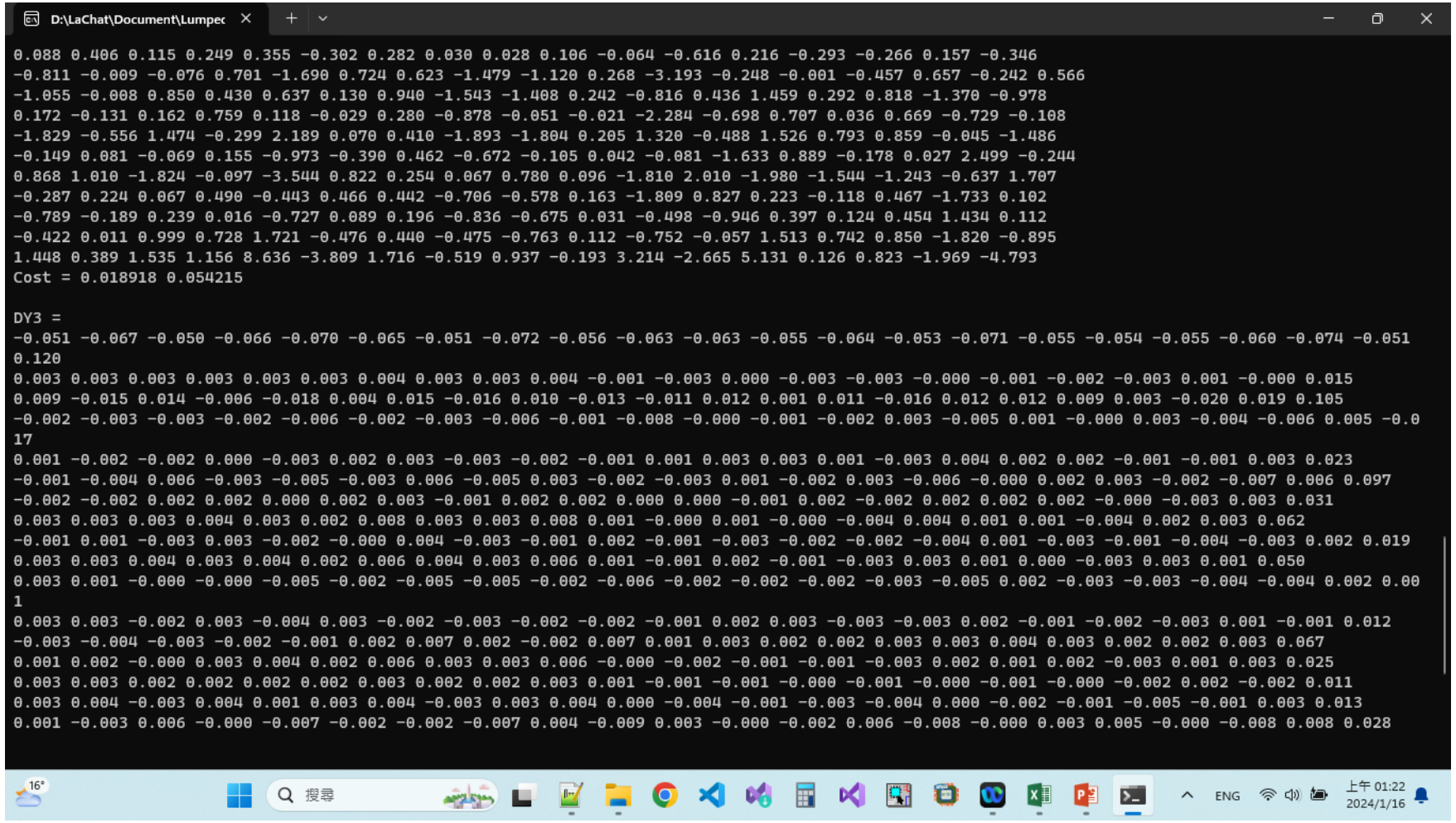
```
TRAINING = 0;
if (TRAINING)
{
    EtaStart = 0.002;
    EtaEnd = 0.005;
    Alpha = 0.1;
    BetaStart = 0.002;
    BetaEnd = 0.005;
    InitWeight = 0.38;
    file = "../data/DNN2_CaselT.csv";
    HL = [(17, 17, 17, 17)];
    LDNN = LumpedDNN(file, HL, false, InitWeight);
    DY3 = LDNNLumpedLearning(LDNN, EtaStart, EtaEnd, Alpha, BetaStart, BetaEnd, 5, 0.01);
}
else
{
    file = "../data/DNN2_Case1.csv";
    HL = [(17, 17, 17, 17)];
    LDNN = LumpedDNN(file, HL, true, 0);
    DY3 = LDNNForwardPropagation(LDNN, 22);
}

```

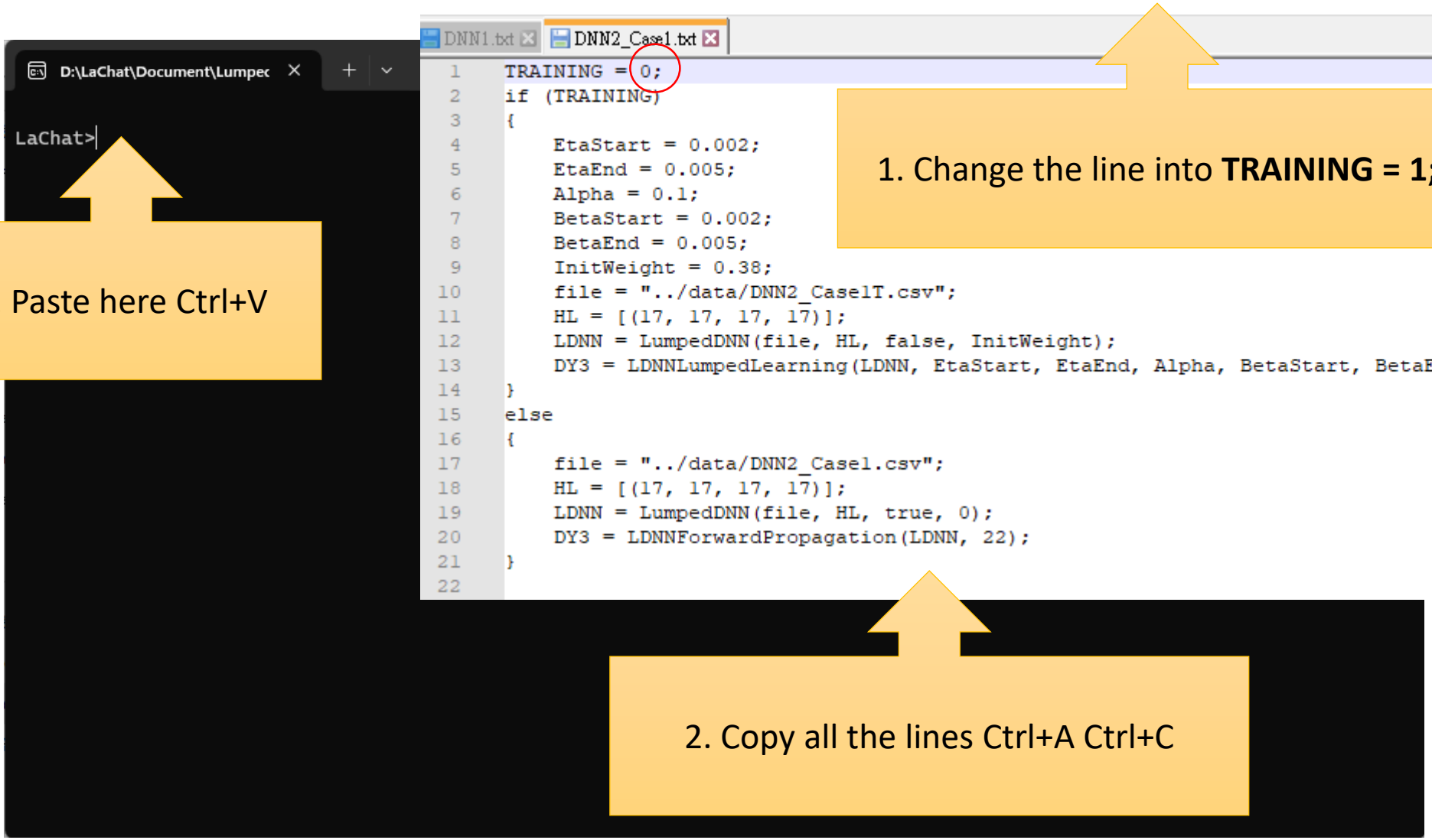
Execute Lachat.exe (Verification)



Results (Verification)



Execute Lachat.exe (Verification)



Case 2

Procedures

- Go to the sub-folder ../data
- Open DNN2_case2.txt
- Copy the lines into the lachat.exe
- The symbiosis result is stored in d:/LDNN.txt and also on the screen

Your Own Application

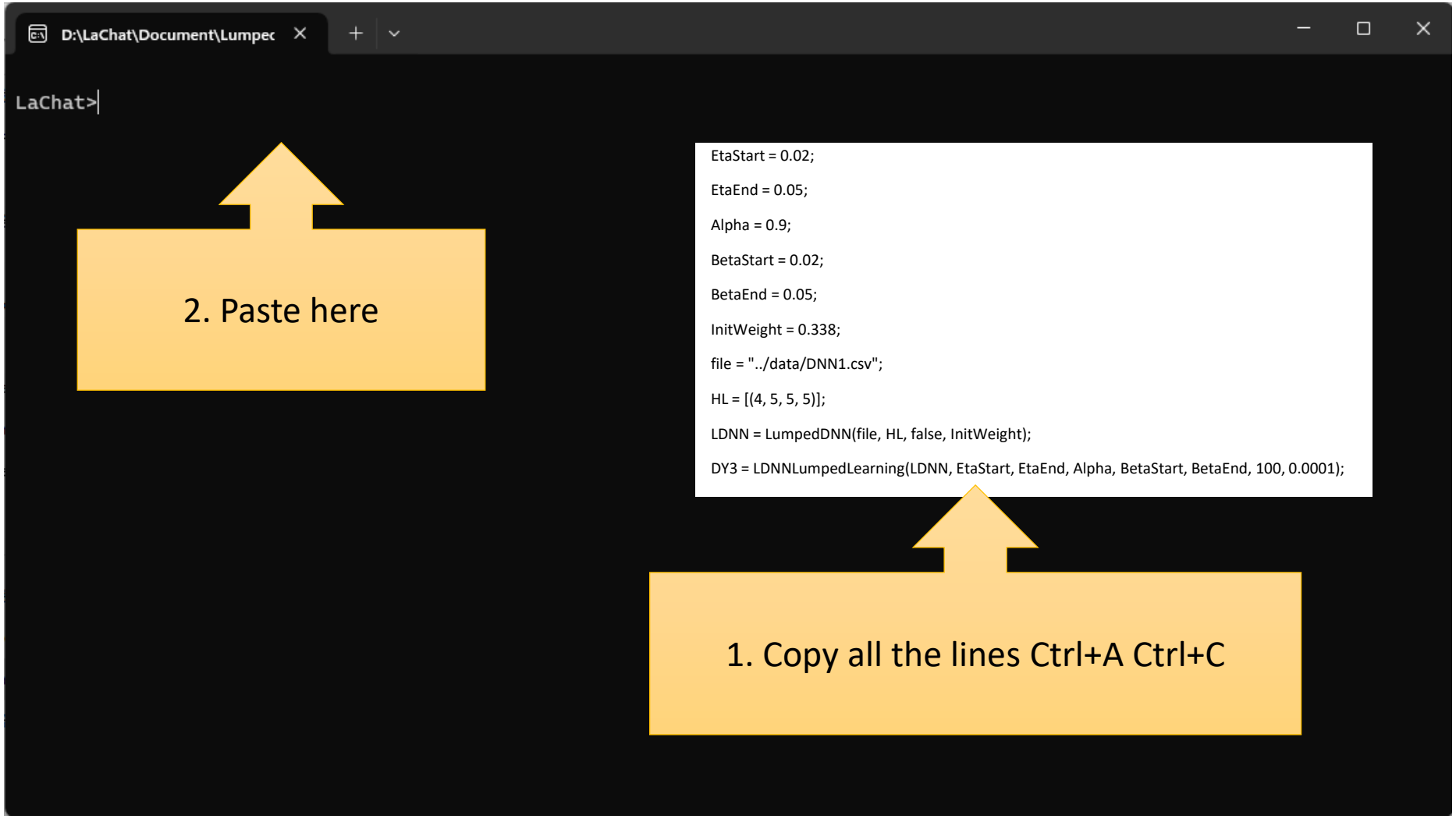
Create File DNN1.csv using MS EXCEL

[	X0	]=	4	14										
4	7	2	-6	-9	10	4	10	-4	-6	-1	-5	-9	10	-1
7	-10	-2	-9	-5	5	0	1	-6	-1	-9	-6	10	6	3
-7	10	-8	-9	2	-5	-6	-8	6	-9	3	-1	-2	-2	5
-10	-9	1	4	7	-4	5	3	-3	5	-9	4	-10	-5	-8
[	YD	]=	5	14										
-9	-6	-8	-3	-1	5	-1	6	-8	-8	9	0	3	9	5
8	8	-2	-6	5	-7	-7	4	-4	-9	-3	9	2	-6	-7
1	2	-2	2	-5	4	9	6	2	-9	8	10	-10	8	9
8	1	-7	-7	-8	8	0	5	6	0	1	7	-6	-10	7
-8	8	4	0	-6	-10	-10	3	10	-7	-2	10	-2	6	-2
7	2	-3	-3	4	-3	1	1	2	-10	4	-9	-3	-3	1

Create File DNN1.txt

```
EtaStart = 0.02;
EtaEnd = 0.05;
Alpha = 0.9;
BetaStart = 0.02;
BetaEnd = 0.05;
InitWeight = 0.338;
file = "../data/DNN1.csv";
HL = [(4, 5, 5, 5)];
LDNN = LumpedDNN(file, HL, false, InitWeight);
DY3 = LDNNLumpedLearning(LDNN, EtaStart, EtaEnd, Alpha, BetaStart,
BetaEnd, 100, 0.0001);
```

Execute Lachat.exe (Training)




Thank You!