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In [9]: 'C:/Users/ujjwa/OneDrive - Centennial College/Documents/Semester_3/
Artificial_Intelligence/Assignments/Neural_Network/Assignment#5_Ujjwal/Exercise#3_Ujjwal/
Ujjwal#Ex3.py' = 'C:/Users/ujjwa/OneDrive - Centennial College/Documents/Semester_3/
Artificial_Intelligence/Assignments/Neural_Network/Assignment#5_Ujjwal/Exercise#3_Ujjwal '
```

```
[[-0.3962035  0.453771 ]
 [-0.4819838 -0.09467085]
 [ 0.54946744 0.03979834]
 [ 0.23025254 -0.22138124]
 [ 0.22380111 0.40155081]
 [-0.57805407 0.30017318]
 [ 0.58663331 0.29779879]
 [-0.26346721 0.34713519]
 [-0.47612879 -0.06252777]
 [ 0.4903146  -0.24766302]
 [-0.25466959 -0.44396571]
 [-0.57675965 0.21460264]
 [-0.34604626 -0.28134401]
 [-0.01011221 -0.53596495]
 [ 0.08894113 -0.42392571]
 [ 0.10716664 0.23971003]
 [-0.47719869 -0.10313281]
 [ 0.23328019 -0.10298488]
 [-0.54005585 0.04307569]
 [ 0.19655357 0.01786693]
 [ 0.53351371 0.10386605]
 [ 0.4840823  -0.43503036]
 [-0.43286838 0.36886955]
 [-0.1227878  -0.40157496]
 [ 0.5130103  -0.18268097]
 [ 0.30097452 0.27119758]
 [ 0.45996731 0.14840665]
 [ 0.30113092 -0.18132199]
 [-0.27608653 0.47506346]
 [-0.08629057 0.55780806]
 [ 0.1961298  0.14603486]
 [-0.46230483 0.53938711]
 [-0.06010544 0.09406754]
 [-0.11023584 -0.31556762]
 [ 0.48405542 0.08841538]
 [-0.59655561 0.1405739 ]
 [-0.20802612 0.03246972]
 [ 0.46313052 -0.17127629]
 [ 0.49024218 0.14803214]
 [-0.58101451 0.51532468]
 [ 0.2290763  0.59678742]
 [-0.39319139 -0.4354371 ]
 [ 0.51911456 0.23618179]
 [-0.52079979 0.30655566]
 [ 0.30465143 0.50762944]
 [ 0.25382971 -0.45087485]
 [-0.57614384 -0.56854682]
 [-0.56603221 -0.30454672]
 [ 0.43203354 0.04659728]
```

[ 0.06338637 0.41043707]  
 [-0.45099202 -0.26497959]  
 [ 0.10291113 0.5635149 ]  
 [ 0.07323626 -0.57762325]  
 [ 0.36075921 -0.32043087]  
 [ 0.36852623 -0.13456723]  
 [ 0.43625023 0.29654597]  
 [ 0.06748828 -0.43625373]  
 [-0.52809877 -0.45438785]  
 [-0.54653775 -0.47100705]  
 [-0.32914879 0.25558678]  
 [ 0.07166038 -0.58493282]  
 [-0.51363086 0.5607316 ]  
 [ 0.08172055 -0.35604812]  
 [-0.29720911 0.29259102]  
 [-0.36548462 0.09763071]  
 [ 0.56402399 0.41619456]  
 [-0.31218269 -0.00747634]  
 [ 0.14394686 0.39477708]  
 [-0.41185033 -0.57770856]  
 [-0.51597343 -0.01638587]  
 [ 0.12759535 0.08262172]  
 [-0.21916511 0.58633939]  
 [ 0.09569426 -0.14383059]  
 [ 0.06113786 0.29440132]  
 [ 0.20307947 -0.28209653]  
 [-0.5203982 -0.15589896]  
 [ 0.15566101 -0.34779119]  
 [ 0.30330666 -0.52015622]  
 [-0.28762188 0.36570548]  
 [-0.36787886 0.16735306]  
 [ 0.02960437 0.50976956]  
 [-0.28404388 -0.52084669]  
 [ 0.28207916 0.32661364]  
 [ 0.48937902 0.51836648]  
 [-0.58325811 -0.3187655 ]  
 [ 0.14013403 0.53881958]  
 [ 0.54021134 0.06798383]  
 [ 0.49872762 0.16987945]  
 [-0.13199074 -0.0168112 ]  
 [ 0.12517258 0.05945751]  
 [ 0.51141771 0.50248012]  
 [-0.12614926 0.55591503]  
 [-0.3912532 -0.44840458]  
 [-0.43790501 0.0067946 ]  
 [-0.57417023 0.53756425]  
 [ 0.39253857 -0.58197722]  
 [-0.38856449 -0.20152371]  
 [-0.44280379 0.37138883]  
 [-0.18631602 0.52812898]  
 [ 0.09841702 0.45459838]]  
 [[ 0.05756751]  
 [-0.57665465]  
 [ 0.58926578]  
 [ 0.00887129]

[ 0.62535192]  
[-0.27788089]  
[ 0.88443209]  
[ 0.08366798]  
[-0.53865656]  
[ 0.24265158]  
[-0.69863531]  
[-0.36215701]  
[-0.62739027]  
[-0.54607715]  
[-0.33498458]  
[ 0.34687668]  
[-0.5803315 ]  
[ 0.13029531]  
[-0.49698016]  
[ 0.21442051]  
[ 0.63737976]  
[ 0.04905194]  
[-0.06399884]  
[-0.52436276]  
[ 0.33032933]  
[ 0.57217211]  
[ 0.60837396]  
[ 0.11980893]  
[ 0.19897693]  
[ 0.47151748]  
[ 0.34216466]  
[ 0.07708228]  
[ 0.0339621 ]  
[-0.42580346]  
[ 0.57247081]  
[-0.45598171]  
[-0.1755564 ]  
[ 0.29185423]  
[ 0.63827432]  
[-0.06568983]  
[ 0.82586372]  
[-0.82862849]  
[ 0.75529635]  
[-0.21424413]  
[ 0.81228087]  
[-0.19704514]  
[-1.14469066]  
[-0.87057893]  
[ 0.47863082]  
[ 0.47382345]  
[-0.71597161]  
[ 0.66642602]  
[-0.50438699]  
[ 0.04032834]  
[ 0.23395901]  
[ 0.7327962 ]  
[-0.36876545]  
[-0.98248663]  
[-1.01754479]

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[-0.07356202]
[-0.51327245]
[ 0.04710073]
[-0.27432756]
[-0.00461808]
[-0.26785391]
[ 0.98021855]
[-0.31965903]
[ 0.53872394]
[-0.98955888]
[-0.53235929]
[ 0.21021708]
[ 0.36717428]
[-0.04813633]
[ 0.35553918]
[-0.07901706]
[-0.67629716]
[-0.19213018]
[-0.21684956]
[ 0.07808359]
[-0.2005258 ]
[ 0.53937394]
[-0.80489057]
[ 0.60869279]
[ 1.00774551]
[-0.90202361]
[ 0.67895361]
[ 0.60819517]
[ 0.66860707]
[-0.14880194]
[ 0.18463009]
[ 1.01389783]
[ 0.42976577]
[-0.83965778]
[-0.43111041]
[-0.03660598]
[-0.18943866]
[-0.5900882 ]
[-0.07141496]
[ 0.34181296]
[ 0.5530154 ]]
Epoch: 15; Error: 0.4117307475895261;
Epoch: 30; Error: 0.07563208119057685;
Epoch: 45; Error: 0.04387226102452976;
Epoch: 60; Error: 0.038839866394623015;
Epoch: 75; Error: 0.03204282046919139;
Epoch: 90; Error: 0.03085450171243764;
Epoch: 105; Error: 0.02961350501074536;
Epoch: 120; Error: 0.02656667992624036;
Epoch: 135; Error: 0.025333253894044946;
Epoch: 150; Error: 0.024504981190845775;
Epoch: 165; Error: 0.023023529554614165;
Epoch: 180; Error: 0.022296128915630153;
Epoch: 195; Error: 0.019298073990046002;
Epoch: 210; Error: 0.016275626775981208;

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Epoch: 225; Error: 0.014783805037098205;  
Epoch: 240; Error: 0.014650049428199315;  
Epoch: 255; Error: 0.014244047303976076;  
Epoch: 270; Error: 0.013927297416481979;  
Epoch: 285; Error: 0.013620518802874043;  
Epoch: 300; Error: 0.013568497033586067;  
Epoch: 315; Error: 0.013560645646398034;  
Epoch: 330; Error: 0.013425077532912876;  
Epoch: 345; Error: 0.013359895801873403;  
Epoch: 360; Error: 0.01329426964589358;  
Epoch: 375; Error: 0.013271968666888756;  
Epoch: 390; Error: 0.01324900004495394;  
Epoch: 405; Error: 0.013207881149717639;  
Epoch: 420; Error: 0.013158237001113179;  
Epoch: 435; Error: 0.013131582680022638;  
Epoch: 450; Error: 0.013089023884041652;  
Epoch: 465; Error: 0.013020358876329474;  
Epoch: 480; Error: 0.012994497306822358;  
Epoch: 495; Error: 0.012986000538451762;  
The maximum number of train epochs is reached  
[[0.30388377]]
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In [10]: