Ex: 6 Implement gradient decont and backpropagation in depp neural network. Aimir To implement arradient descent and Backpropagation in depp bourned motions . Objectives: \* To understand gradient descent in an optimized method \* To implement Backproppogation in deep neural network to update weights. \* To implements a simple neural network for clasification \* To observe how loss decrease with iteration. Observation: \* Loss decreases as newlear of iterations increase of weights and bias object to minimize over. \* Backpropagation ensures Covers are afficiently distributed layer of Layer. \* Leavining reate (n) greatly influences con Speed

## P. seudocode:

Begun Initialize weight and bies Standomly For epoch in stange (max epochs) For each input Sample \* forward pass Compute Z= Wxx+6 apply activation to get A Compute output poediction \* Compute loss loss = costly (y-tree, y- Poul)

of Backward pase Compute gradient du , de using Chain

stale update parameters: 16 w= w-a+dw b= b-a+db END for Porint after epoch to Employed Exchanged about in the in out all Results: Therefore implemention of gradient descent and backpropagation in neural network. as weights and brain boyet to primitive even to earthpropegation ensures & distributed layer of layer (4) Lesenting suits (4) tridealise usight and bear sandemly tok epoch in songe (muse epochs) apply activities to get A compute ourpurt presentes

Output :-Alukae of talo Epoch 0, 2005: 0.2558 Spoch 2000, Loss: 0.2454 7000 lever of state galact Speek 4000, Loss: 0.1532 2 pach \$500 1 Lass: 0.1336 Epoch 8000, Loss: 0.1267 Final poudictions: " . 2 without to thousand in all presents. -: 1000g [[0.05300868] and but but be diolog a fuls. [0.95091319] [[888]] LOSS Curve - Gradient Degrant and Back propagation - Training loss. 0.24+ 0-22-0-20-0.18 + 0.16-0.14-2000 4000