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| **Task 13:** | Write a program to implement artificial neural network with back propagation. **Tools: Google co-lab, Python, Scikitlearn, Anaconda navigator**  **Algorithm (ANN with Backpropagation)**   1. **Create simple input–output data (like AND logic gate).** 2. **Initialize an ANN model using MLPClassifier from Scikit-learn.** 3. **Train the model — it automatically uses backpropagation.** 4. **Predict the output for given inputs.** 5. **Display the accuracy and results.**   **PROGRAM:**  # Install sklearn (if not already)  !pip install scikit-learn  from sklearn.neural\_network import MLPClassifier  from sklearn.metrics import accuracy\_score  # Step 1: Sample data (AND gate)  X = [[0,0], [0,1], [1,0], [1,1]]  y = [0, 0, 0, 1] # Output of AND gate  # Step 2: Define ANN model  model = MLPClassifier(hidden\_layer\_sizes=(3,), activation='relu', solver='adam', max\_iter=1000)  # Step 3: Train the model  model.fit(X, y)  # Step 4: Predict  pred = model.predict(X)  # Step 5: Evaluate  acc = accuracy\_score(y, pred)  print("Input:", X)  print("Predicted Output:", pred)  print("Accuracy:", acc)  **OUTPUT:**    **RESULT:** Thus the program was executed successfully and output was verified. |