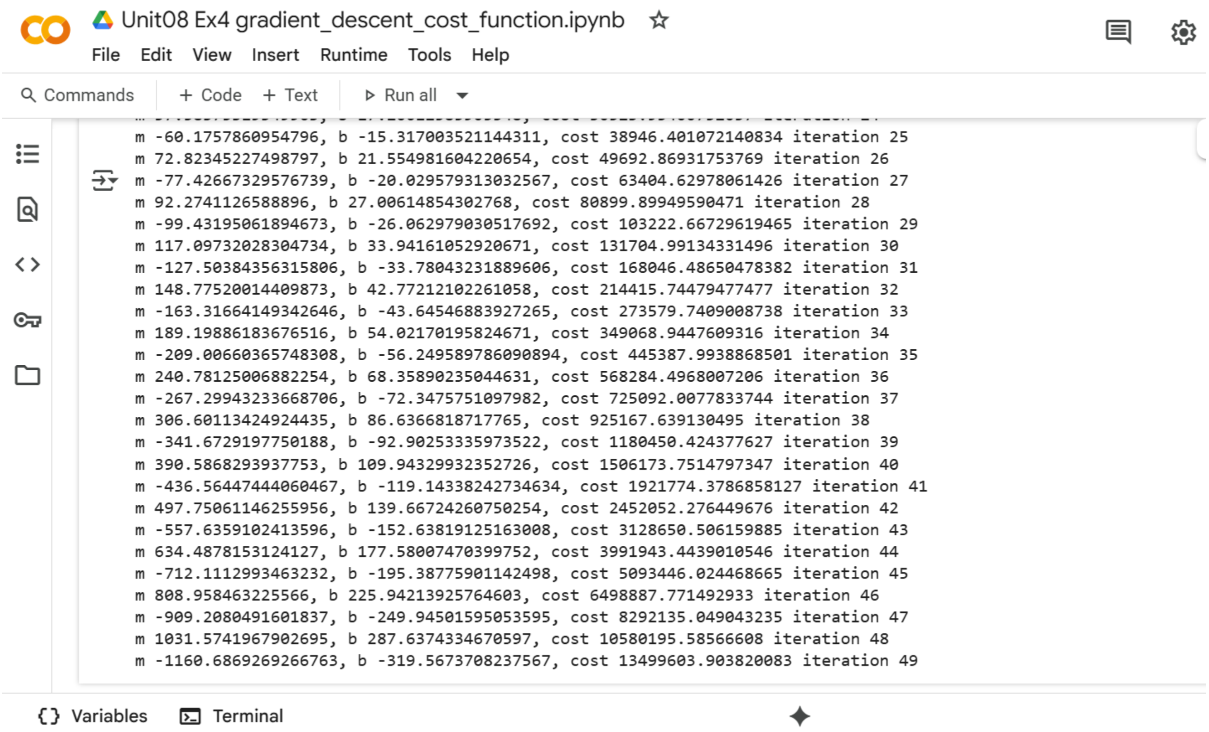
Activity 4

The tutorial illustrated the practical workings of gradient descent by visualizing the decrease in cost over time. We concentrated on fine-tuning the learning rate to help the model converge effectively without overshooting the optimal point. This hands-on exercise clarified how hyperparameters such as the learning rate impact training dynamics and overall model accuracy. It also highlighted the importance of balancing speed and stability during the optimization process.

50 Iterations and 0.09 Learning rate



150 Iterations and 0.09 Learning rate

295 Iterations and 0.18 Learning rate

The experiment demonstrated that adjusting the learning rate and iteration count demands a precise balance. Increasing these parameters without observing the cost trend can cause overshooting or unstable training, while reducing them too much may hinder the model from reaching the optimal minimum. Our findings showed that the most effective strategy is to monitor the cost function's decline and extend training only when necessary—emphasizing the value of adaptive optimization guided by convergence behavior rather than relying on fixed settings.