Part 1:

A close up of a logo

Description automatically generated

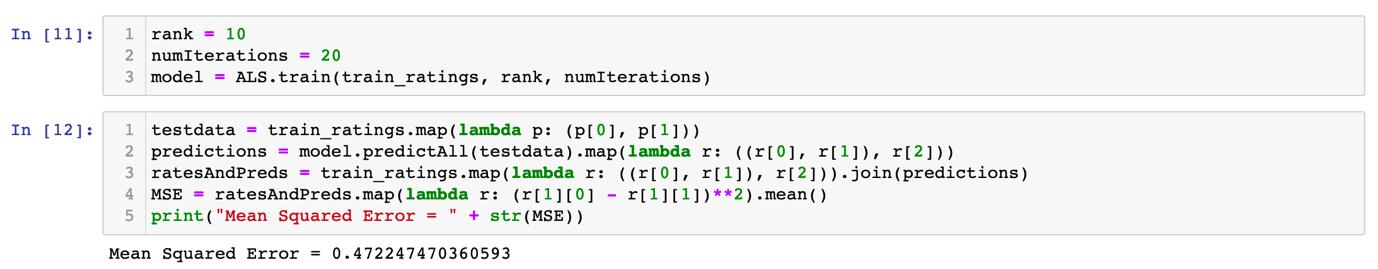
Part 2:

1. fixed numIterations = 20
2. rank = 5

A screenshot of a cell phone

Description automatically generated

1. rank = 10



1. rank = 20

A screenshot of a cell phone

Description automatically generated

1. rank = 30

A screenshot of a cell phone

Description automatically generated

As it shows, as rank increased, the MSE decreased.

1. fixed rank = 20
2. numIterations = 2

A screenshot of a cell phone

Description automatically generated

1. numIterations = 5

A screenshot of a cell phone

Description automatically generated

1. numIterations = 10

A screenshot of a cell phone

Description automatically generated

1. numIterations = 20

A screenshot of a cell phone

Description automatically generated

1. numIterations = 30

because numlteration is too large, the function cannot run properly.

As we see, as numIteration increased, the MSE decreased.

1. With fixed rank = 20, numIterations = 30

A screenshot of a cell phone

Description automatically generated

Size of data Mean Squared Error

2000  0.291120758082147923

5000 0.291259682781938134

10000 0.29208892894787620

20000 0.291487303979932457

50000 0.291021837001804823

100000 0.291294923919096340

As data shows, the size of data won’t affect MSE.