Big Data Midterm (Fall’23)

Q2) Matrix Multplication MapReduce

Mapper:

A screenshot of a computer code

Description automatically generated

Reducer:

A screenshot of a computer code

Description automatically generated

Command: hadoop jar $HADOOP\_HOME/hadoop-streaming-3.2.2.jar -input Matrix\_M.txt,Matrix\_N.txt -output outputmatrix -mapper "python mapper.py" -reducer "python reducer.py" -file mapper.py -file reducer.py

A screenshot of a computer program

Description automatically generated

A black and white screen

Description automatically generated

Result Matrix\_R:

R,0,0,9920

R,0,1,10385

R,0,10,14570

R,0,11,15035

R,0,12,15500

R,0,13,15965

R,0,14,16430

R,0,15,16895

R,0,16,17360

R,0,17,17825

R,0,18,18290

R,0,19,18755

R,0,2,10850

R,0,3,11315

R,0,4,11780

R,0,5,12245

R,0,6,12710

R,0,7,13175

R,0,8,13640

R,0,9,14105

R,1,0,10415

R,1,1,10910

R,1,10,15365

R,1,11,15860

R,1,12,16355

R,1,13,16850

R,1,14,17345

R,1,15,17840

R,1,16,18335

R,1,17,18830

R,1,18,19325

R,1,19,19820

R,1,2,11405

R,1,3,11900

R,1,4,12395

R,1,5,12890

R,1,6,13385

R,1,7,13880

R,1,8,14375

R,1,9,14870

R,10,0,14870

R,10,1,15635

R,10,10,22520

R,10,11,23285

R,10,12,24050

R,10,13,24815

R,10,14,25580

R,10,15,26345

R,10,16,27110

R,10,17,27875

R,10,18,28640

R,10,19,29405

R,10,2,16400

R,10,3,17165

R,10,4,17930

R,10,5,18695

R,10,6,19460

R,10,7,20225

R,10,8,20990

R,10,9,21755

R,11,0,15365

R,11,1,16160

R,11,10,23315

R,11,11,24110

R,11,12,24905

R,11,13,25700

R,11,14,26495

R,11,15,27290

R,11,16,28085

R,11,17,28880

R,11,18,29675

R,11,19,30470

R,11,2,16955

R,11,3,17750

R,11,4,18545

R,11,5,19340

R,11,6,20135

R,11,7,20930

R,11,8,21725

R,11,9,22520

R,12,0,15860

R,12,1,16685

R,12,10,24110

R,12,11,24935

R,12,12,25760

R,12,13,26585

R,12,14,27410

R,12,15,28235

R,12,16,29060

R,12,17,29885

R,12,18,30710

R,12,19,31535

R,12,2,17510

R,12,3,18335

R,12,4,19160

R,12,5,19985

R,12,6,20810

R,12,7,21635

R,12,8,22460

R,12,9,23285

R,13,0,16355

R,13,1,17210

R,13,10,24905

R,13,11,25760

R,13,12,26615

R,13,13,27470

R,13,14,28325

R,13,15,29180

R,13,16,30035

R,13,17,30890

R,13,18,31745

R,13,19,32600

R,13,2,18065

R,13,3,18920

R,13,4,19775

R,13,5,20630

R,13,6,21485

R,13,7,22340

R,13,8,23195

R,13,9,24050

R,14,0,16850

R,14,1,17735

R,14,10,25700

R,14,11,26585

R,14,12,27470

R,14,13,28355

R,14,14,29240

R,14,15,30125

R,14,16,31010

R,14,17,31895

R,14,18,32780

R,14,19,33665

R,14,2,18620

R,14,3,19505

R,14,4,20390

R,14,5,21275

R,14,6,22160

R,14,7,23045

R,14,8,23930

R,14,9,24815

R,15,0,17345

R,15,1,18260

R,15,10,26495

R,15,11,27410

R,15,12,28325

R,15,13,29240

R,15,14,30155

R,15,15,31070

R,15,16,31985

R,15,17,32900

R,15,18,33815

R,15,19,34730

R,15,2,19175

R,15,3,20090

R,15,4,21005

R,15,5,21920

R,15,6,22835

R,15,7,23750

R,15,8,24665

R,15,9,25580

R,16,0,17840

R,16,1,18785

R,16,10,27290

R,16,11,28235

R,16,12,29180

R,16,13,30125

R,16,14,31070

R,16,15,32015

R,16,16,32960

R,16,17,33905

R,16,18,34850

R,16,19,35795

R,16,2,19730

R,16,3,20675

R,16,4,21620

R,16,5,22565

R,16,6,23510

R,16,7,24455

R,16,8,25400

R,16,9,26345

R,17,0,18335

R,17,1,19310

R,17,10,28085

R,17,11,29060

R,17,12,30035

R,17,13,31010

R,17,14,31985

R,17,15,32960

R,17,16,33935

R,17,17,34910

R,17,18,35885

R,17,19,36860

R,17,2,20285

R,17,3,21260

R,17,4,22235

R,17,5,23210

R,17,6,24185

R,17,7,25160

R,17,8,26135

R,17,9,27110

R,18,0,18830

R,18,1,19835

R,18,10,28880

R,18,11,29885

R,18,12,30890

R,18,13,31895

R,18,14,32900

R,18,15,33905

R,18,16,34910

R,18,17,35915

R,18,18,36920

R,18,19,37925

R,18,2,20840

R,18,3,21845

R,18,4,22850

R,18,5,23855

R,18,6,24860

R,18,7,25865

R,18,8,26870

R,18,9,27875

R,19,0,19325

R,19,1,20360

R,19,10,29675

R,19,11,30710

R,19,12,31745

R,19,13,32780

R,19,14,33815

R,19,15,34850

R,19,16,35885

R,19,17,36920

R,19,18,37955

R,19,19,38990

R,19,2,21395

R,19,3,22430

R,19,4,23465

R,19,5,24500

R,19,6,25535

R,19,7,26570

R,19,8,27605

R,19,9,28640

R,2,0,10910

R,2,1,11435

R,2,10,16160

R,2,11,16685

R,2,12,17210

R,2,13,17735

R,2,14,18260

R,2,15,18785

R,2,16,19310

R,2,17,19835

R,2,18,20360

R,2,19,20885

R,2,2,11960

R,2,3,12485

R,2,4,13010

R,2,5,13535

R,2,6,14060

R,2,7,14585

R,2,8,15110

R,2,9,15635

R,3,0,11405

R,3,1,11960

R,3,10,16955

R,3,11,17510

R,3,12,18065

R,3,13,18620

R,3,14,19175

R,3,15,19730

R,3,16,20285

R,3,17,20840

R,3,18,21395

R,3,19,21950

R,3,2,12515

R,3,3,13070

R,3,4,13625

R,3,5,14180

R,3,6,14735

R,3,7,15290

R,3,8,15845

R,3,9,16400

R,4,0,11900

R,4,1,12485

R,4,10,17750

R,4,11,18335

R,4,12,18920

R,4,13,19505

R,4,14,20090

R,4,15,20675

R,4,16,21260

R,4,17,21845

R,4,18,22430

R,4,19,23015

R,4,2,13070

R,4,3,13655

R,4,4,14240

R,4,5,14825

R,4,6,15410

R,4,7,15995

R,4,8,16580

R,4,9,17165

R,5,0,12395

R,5,1,13010

R,5,10,18545

R,5,11,19160

R,5,12,19775

R,5,13,20390

R,5,14,21005

R,5,15,21620

R,5,16,22235

R,5,17,22850

R,5,18,23465

R,5,19,24080

R,5,2,13625

R,5,3,14240

R,5,4,14855

R,5,5,15470

R,5,6,16085

R,5,7,16700

R,5,8,17315

R,5,9,17930

R,6,0,12890

R,6,1,13535

R,6,10,19340

R,6,11,19985

R,6,12,20630

R,6,13,21275

R,6,14,21920

R,6,15,22565

R,6,16,23210

R,6,17,23855

R,6,18,24500

R,6,19,25145

R,6,2,14180

R,6,3,14825

R,6,4,15470

R,6,5,16115

R,6,6,16760

R,6,7,17405

R,6,8,18050

R,6,9,18695

R,7,0,13385

R,7,1,14060

R,7,10,20135

R,7,11,20810

R,7,12,21485

R,7,13,22160

R,7,14,22835

R,7,15,23510

R,7,16,24185

R,7,17,24860

R,7,18,25535

R,7,19,26210

R,7,2,14735

R,7,3,15410

R,7,4,16085

R,7,5,16760

R,7,6,17435

R,7,7,18110

R,7,8,18785

R,7,9,19460

R,8,0,13880

R,8,1,14585

R,8,10,20930

R,8,11,21635

R,8,12,22340

R,8,13,23045

R,8,14,23750

R,8,15,24455

R,8,16,25160

R,8,17,25865

R,8,18,26570

R,8,19,27275

R,8,2,15290

R,8,3,15995

R,8,4,16700

R,8,5,17405

R,8,6,18110

R,8,7,18815

R,8,8,19520

R,8,9,20225

R,9,0,14375

R,9,1,15110

R,9,10,21725

R,9,11,22460

R,9,12,23195

R,9,13,23930

R,9,14,24665

R,9,15,25400

R,9,16,26135

R,9,17,26870

R,9,18,27605

R,9,19,28340

R,9,2,15845

R,9,3,16580

R,9,4,17315

R,9,5,18050

R,9,6,18785

R,9,7,19520

R,9,8,20255

R,9,9,20990