NM Group Daily Report

Name: Lakindu Siriwardana

Task: SOCP Java code convert to MATLAB

Day: Day – 01

Date: 2022.05.11

- Study the Second Order Cone Programming (SOCP) tutorial on the web. Link - https://en.wikipedia.org/wiki/Second-order_cone_programming

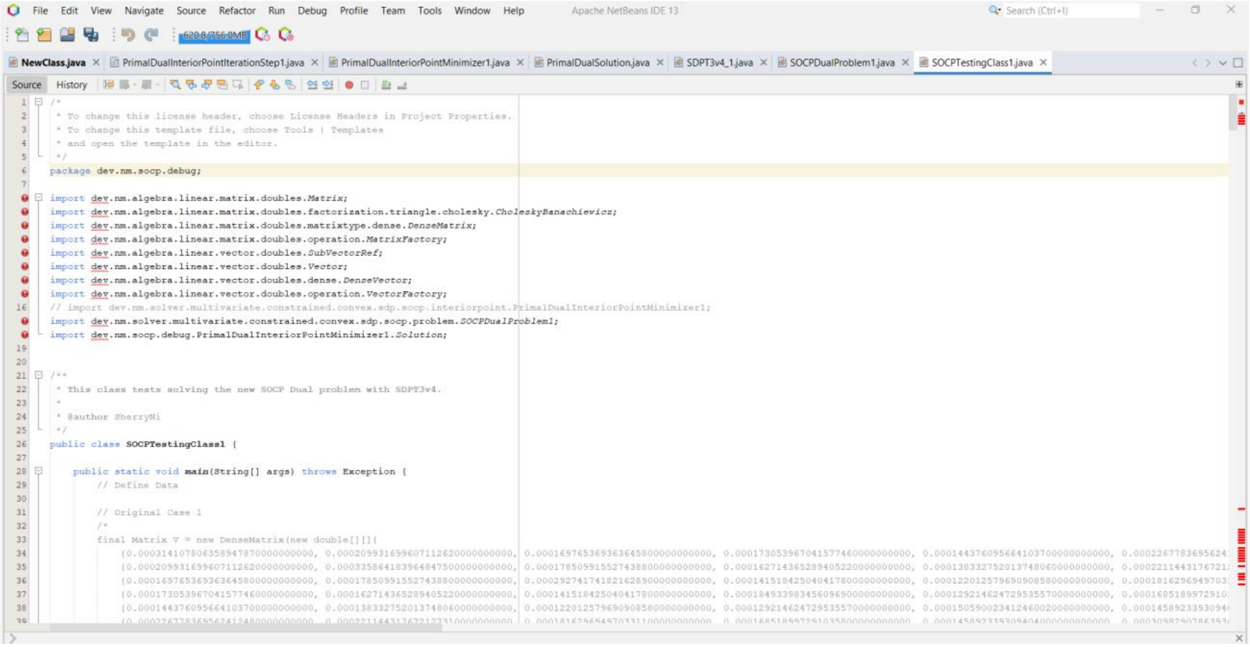
- Study how to code in MATLAB basics on YouTube.

- Practice MATLAB basic codes.

- Go through the Flow chart of the Interior Point Method Algorithm for SOCP.

- Try to compile the SOCP java programs in “SOCP-Java-v1” folder. But I occur some errors related to the importing packages.

- I try to solve them but I could not figure out how to solve it.



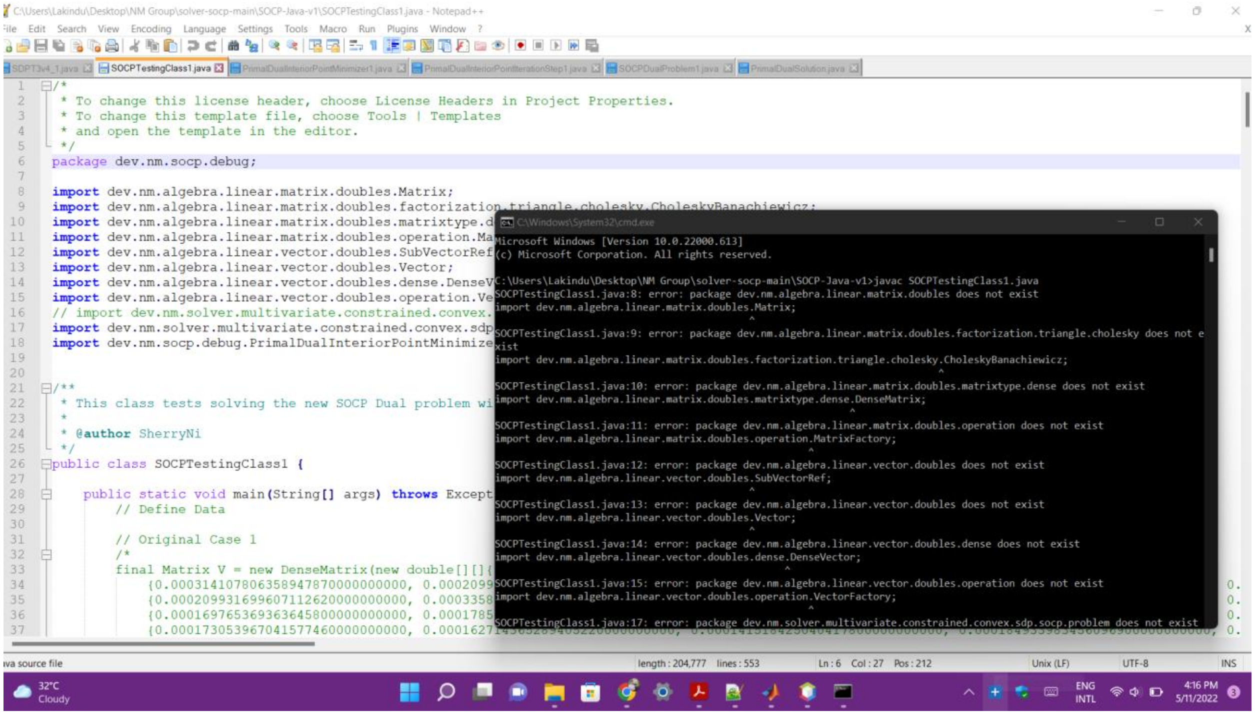
```
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package dev.nm.socp.debug;

import dev.nm.algebra.linear.matrix.doubles.Matrix;
import dev.nm.algebra.linear.matrix.doubles.factorization.triangle.cholesky.CholeskyBanachiewicz;
import dev.nm.algebra.linear.matrix.doubles.matrixtype.dense.DenseMatrix;
import dev.nm.algebra.linear.matrix.doubles.operation.MatrixFactory;
import dev.nm.algebra.linear.vector.doubles.SubVectorRef;
import dev.nm.algebra.linear.vector.doubles.Vector;
import dev.nm.algebra.linear.vector.doubles.dense.DenseVector;
import dev.nm.algebra.linear.vector.doubles.operation.VectorFactory;
// import dev.nm.solver.multivariate.constrained.convex.sdp.socp.interiorpoint.PrimalDualInteriorPointMinimizer1;
import dev.nm.solver.multivariate.constrained.convex.sdp.socp.problem.SOCPDualProblem1;
import dev.nm.socp.debug.PrimalDualInteriorPointMinimizer1.Solution;


/**
 * This class tests solving the new SOCP Dual problem with SDPT3v4.
 *
 * @author SherryNi
 */
public class SOCPTestingClass1 {

    public static void main(String[] args) throws Exception {
        // Define Data

        // Original Case 1
        /*
        final Matrix V = new DenseMatrix(new double[][]{
            {0.00031410780635894787000000000000, 0.00020993169960711262000000000000, 0.00016976536936364580000000000000, 0.00017305396704157746000000000000, 0.00014437609566410370000000000000, 0.0002267783695624
            {0.00020993169960711262000000000000, 0.00033586418396484750000000000000, 0.00017850991552743880000000000000, 0.00016271436528940522000000000000, 0.00013833275201374806000000000000, 0.0002211443176721
            {0.00016976536936364580000000000000, 0.00017850991552743880000000000000, 0.00029274174182162890000000000000, 0.00014151842504041780000000000000, 0.00012201257969090858000000000000, 0.0001816296949703
            {0.00017305396704157746000000000000, 0.00016271436528940522000000000000, 0.00014151842504041780000000000000, 0.00018493398345609690000000000000, 0.00012921462472953557000000000000, 0.000168518997291
            {0.00014437609566410370000000000000, 0.00013833275201374806000000000000, 0.00012201257969090858000000000000, 0.00012921462472953557000000000000, 0.00015059002341246002000000000000, 0.000145892339309
            {0.00022677836956241248000000000000, 0.00022114431767212731000000000000, 0.00018162969497033110000000000000, 0.00016851899729103580000000000000, 0.00014589233930940400000000000000, 0.0003098290786353
```



C:\Users\Lakindu\Desktop\NM Group\solver-socp-main\SOCP-Java-v1\SOCPTestingClass1.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
SDPT3v4_1.java
SOCPTestingClass1.java
PrimalDualInteriorPointMinimizer1.java
PrimalDualInteriorPointIterationStep1.java
SOCPDualProblem1.java
PrimalDualSolution.java
C:\Windows\System32\cmd.exe
Java source file
length : 204,777 lines : 553
Ln : 6 Col : 27 Pos : 212
Unix (LF)
UTF-8
INS
32°C
Cloudy
ENG
INTL
4:16 PM
5/11/2022

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package dev.nm.socp.debug;

import dev.nm.algebra.linear.matrix.doubles.Matrix;
import dev.nm.algebra.linear.matrix.doubles.factorization.triangle.cholesky.CholeskyBanachiewicz;
import dev.nm.algebra.linear.matrix.doubles.matrixtype.d
import dev.nm.algebra.linear.matrix.doubles.operation.Ma
import dev.nm.algebra.linear.vector.doubles.SubVectorRef
import dev.nm.algebra.linear.vector.doubles.Vector;
import dev.nm.algebra.linear.vector.doubles.dense.DenseV
import dev.nm.algebra.linear.vector.doubles.operation.Ve
// import dev.nm.solver.multivariate.constrained.convex.
import dev.nm.solver.multivariate.constrained.convex.sdp
import dev.nm.socp.debug.PrimalDualInteriorPointMinimize


/**
 * This class tests solving the new SOCP Dual problem wi
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 * @author SherryNi
 */
public class SOCPTestingClass1 {

    public static void main(String[] args) throws Except
        // Define Data

        // Original Case 1
        /*
        final Matrix V = new DenseMatrix(new double[][]{
            {0.000314107806358947870000000000, 0.0002099
            {0.000209931699607112620000000000, 0.0003358
            {0.000169765369363645800000000000, 0.0001785
            {0.000173053967041577460000000000, 0.0001627
```

```
Microsoft Windows [Version 10.0.22000.613]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Lakindu\Desktop\NM Group\solver-socp-main\SOCP-Java-v1>javac SOCPTestingClass1.java
SOCPTestingClass1.java:8: error: package dev.nm.algebra.linear.matrix.doubles does not exist
import dev.nm.algebra.linear.matrix.doubles.Matrix;
                                           ^
SOCPTestingClass1.java:9: error: package dev.nm.algebra.linear.matrix.doubles.factorization.triangle.cholesky does not e
xist
import dev.nm.algebra.linear.matrix.doubles.factorization.triangle.cholesky.CholeskyBanachiewicz;
                                                                           ^
SOCPTestingClass1.java:10: error: package dev.nm.algebra.linear.matrix.doubles.matrixtype.dense does not exist
import dev.nm.algebra.linear.matrix.doubles.matrixtype.dense.DenseMatrix;
                                                            ^
SOCPTestingClass1.java:11: error: package dev.nm.algebra.linear.matrix.doubles.operation does not exist
import dev.nm.algebra.linear.matrix.doubles.operation.MatrixFactory;
                                                     ^
SOCPTestingClass1.java:12: error: package dev.nm.algebra.linear.vector.doubles does not exist
import dev.nm.algebra.linear.vector.doubles.SubVectorRef;
                                           ^
SOCPTestingClass1.java:13: error: package dev.nm.algebra.linear.vector.doubles does not exist
import dev.nm.algebra.linear.vector.doubles.Vector;
                                           ^
SOCPTestingClass1.java:14: error: package dev.nm.algebra.linear.vector.doubles.dense does not exist
import dev.nm.algebra.linear.vector.doubles.dense.DenseVector;
                                                 ^
SOCPTestingClass1.java:15: error: package dev.nm.algebra.linear.vector.doubles.operation does not exist
import dev.nm.algebra.linear.vector.doubles.operation.VectorFactory;
                                                     ^
SOCPTestingClass1.java:17: error: package dev.nm.solver.multivariate.constrained.convex.sdp.socp.problem does not exist
```