CS6890 HW03

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July 24 2017

Problem 1

See MatrixSimplex.java

```
  new MatrixSimplex(new String[][]{
                  {"x1", "x2", "x3", "s1", "s2", "P"},
                  {"x1", "x3", "P"}
          },new int[][]{
                  {2,3,2,1,0,0},
                  {1,1,2,0,1,0}
          },new int[]{1000,800},
                  new int[]{-7,-8,-10,0,0,1}).doSimplex();
```

Example output for this problem is

```
x1 = 200.0
x3 = 300.0
P = 4400.0
s2 = 0.0
s1 = 0.0
x2 = 0.0
```

Problem 2

No solution

Problem 3

```
  new MatrixSimplex(new String[][]{
                {"x1", "x2", "s1", "s2", "z"},
                {"x1", "x2", "z"}
        },new int[][]{
                {2,3,1,0},
                {4,3,0,1}
        },new int[]{72,108},
                new int[]{-10,-9,0,0,0}).doSimplex();
```

Example output for this problem is

```
x1 = 12.0
x2 = 18.0
P = 288.0
s2 = 0.0
s1 = 0.0
```

Problem 4

```
maximize profit 3pas+4cargo
steel     4p+5c   <= 20*16
plastic   1p+3c   <= 15*16
wood      8p+12c  <= 20*12
          p,c >= 0


new MatrixSimplex(new String[][]{
        {"p", "c", "s1", "s2", "P"},
        {"p", "c", "P"}
},new int[][]{
        {4,5,1,0,0},
        {1,3,0,1,0},
        {8,12,0,0,1}
},new int[]{20*16,15*16,20*12},
        new int[]{-3,-4,0,0,0,0}).doSimplex();

Results in:

p = 64.0
c = 48.0
P = 496.0
s2 = 0.0
s1 = 0.0
```

Problem 5

```
flour       400p+600g <= 9200
butter      200p+100g <= 2400
poppy seeds 100p      <= 1500
chocolate        150g <= 2100

2p+4g

new MatrixSimplex(new String[][]{
                {"p", "g", "s1", "s2","s3","s4", "P"},
                {"poppy seed cake", "german chocolate cake","Profit", "flour","butte
        },new int[][]{
                {400,600,1,0,0,0},
                {200,100,0,1,0,0},
                {100,0,0,0,1,0},
                {0,150,0,0,0,1}
        },new int[]{9200,2400,1500,2100},
                new int[]{-2,-4,0,0,0,0,0}).doSimplex();

Results in:

poppy seed cake = 2.0
german chocolate cake = 600.0
Profit = 1300.0
flour = 14.0
butter = 60.0
poppy seeds = 0.0
chocolate = 0.0
```