Discussion of Test Results

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$$M = \begin{matrix} a & b & c \\ d & e & f \\ g & h & i \end{matrix}$$

R = a(ei-fh) – b(fg-di) + c(dh-eg)

Where R is the determinant of M.

Test 1

$$M = \begin{matrix} 20 & 20 & 50 \\ 10 & 6 & 70 \\ 40 & 3 & 2 \end{matrix}$$

R = 20*(6*2-70*3) – 20*(10*2 – 70*40) + 50*(10*3 – 6*40)
R = -3960 + 55600 -10500
R = 41140

Let L be the largest element in M.

L = 70

The results from the running DET with the same matrix M.

```
Child Process: working with element 3 of D
Child Process 1 Finished - Elapsed Time was: 90 micro sec
Child Process: working with element 2 of D
Child Process 2 Finished - Elapsed Time was: 72 micro sec
Child Process: working with element 1 of D
Child Process 3 Finsihed - Elapsed Time was: 128 micro sec
Calculations Finished - Program Total Elapsed Time: 659 micro sec


INPUT MATRIX
 20  20  50
 10  6  70
 40  3  2

RESULTS
D = [-3960, 55600, -10500]
R = 41140
L = 70
```

The output matches the expected results.
The determinant R is 41140.
The largest element L in M is 70.

Test 2

$$M = \begin{matrix} 1 & 2 & 3 \\ 0 & 1 & 5 \\ 5 & 6 & 0 \end{matrix}$$

L = 6
R = 1*(1*0 – 6*5) – 2*(0*0 – 5*5) + 3*(0*6 – 1*5)
R = -30 +50 -15
R = 5

The results from the running DET with the same matrix M.

```
Child Process: working with element 3 of D
Child Process 1 Finished - Elapsed Time was: 94 micro sec
Child Process: working with element 2 of D
Child Process 2 Finished - Elapsed Time was: 78 micro sec
Child Process: working with element 1 of D
Child Process 3 Finsihed - Elapsed Time was: 124 micro sec
Calculations Finished - Program Total Elapsed Time: 602 micro sec


INPUT MATRIX
 1  2  3
 0  1  5
 5  6  0

RESULTS
D = [-30, 50, -15]
R = 5
L = 6
```

The program results match the calculated expected results.

R = 5
L = 6

Test 3

$$M = \begin{matrix} 80 & -20 & 50 \\ 10 & 16 & 70 \\ -40 & 69 & 11 \end{matrix}$$

R = 80*(16*11 – 70*69) – (-20)*(10*11 – 70*(-40)) + 50*(10*69 – 16*(-40))
R = -372320 + 58200 + 66500
R = -247620

L = 80

The results from the running DET with the same matrix M.

```
Child Process: working with element 3 of D
Child Process 1 Finished - Elapsed Time was: 135 micro sec
Child Process: working with element 2 of D
Child Process: working with element 1 of D
Child Process 3 Finsihed - Elapsed Time was: 181 micro sec
Child Process 2 Finished - Elapsed Time was: 191 micro sec
Calculations Finished - Program Total Elapsed Time: 924 micro sec


INPUT MATRIX
 80  -20  50
 10  16  70
 -40  69  11

RESULTS
D = [-372320, 58200, 66500]
R = -247620
L = 80
```

The results match the expected results.

R = -247620
L = 80

Therefore, the program seems to work, and correctly calculates the determinant and largest value in M.