

Lampiran 1

$$N = \text{SWP } [1] M$$

a. Matrik umum, dibagi dengan elemen pivot $M_{1,1}$

$$M = \left[\begin{array}{c|cc} 5 & 3 & 2 \\ \hline 3 & 5 & 1 \\ 2 & 1 & 6 \end{array} \right]$$

b. Berbanding terbalik negatif dengan elemen pivot $M_{1,1}$

$$\begin{array}{l} i,j \\ \text{--->} \\ i=1 \end{array} \left[\begin{array}{c|cc} -0,2 & 3 & 2 \\ \hline 3 & 5 & 1 \\ 2 & 1 & 6 \end{array} \right]$$

c. Baris pertama dan kolom pertama dibagi dengan elemen pivot $M_{1,1}$.

$$\begin{array}{l} i,j \\ \text{--->} \\ i=1 \end{array} \left[\begin{array}{c|cc} -0,2 & 0,6 & 0,4 \\ \hline 0,6 & 5 & 1 \\ 0,4 & 1 & 6 \end{array} \right] \begin{array}{l} \text{dengan } 3/5 = 0,6 \text{ untuk } j = 2 \\ \text{dengan } 2/5 = 0,4 \text{ untuk } j = 3 \end{array}$$

d. Sisa baris dan kolom untuk posisi pivot

$$\begin{array}{l} j,k \\ \text{--->} \\ i=1 \end{array} \left[\begin{array}{c|cc} -0,2 & 0,6 & 0,4 \\ \hline 0,6 & 3,2 & -0,2 \\ 0,4 & -0,2 & 5,2 \end{array} \right] = N \begin{array}{l} 5 - (3 \times 3/5) = 3,2 \text{ untuk } j,k=2,2 \\ 1 - (3 \times 2/5) = -0,2 \text{ untuk } j,k=2,3 \\ 6 - (2 \times 2/5) = 5,2 \text{ untuk } j,k=3,3 \end{array}$$

Lampiran 2

$p = \text{SWP}[2] \cdot N$

a. Matrik asli, dibagi kedalam elemen pivot $N_{2,2}$

$$N = \begin{bmatrix} -0,2 & 0,6 & 0,4 \\ 0,6 & 3,2 & -0,2 \\ 0,4 & -0,2 & 5,2 \end{bmatrix}$$

b. Berbanding terbalik negatif dengan elemen pivot $N_{2,2}$

$$\begin{array}{l} i,i \\ \hline \text{---}> \\ i=2 \end{array} \begin{bmatrix} -0,2 & 0,6 & 0,4 \\ 0,6 & -0,3125 & -0,2 \\ 0,4 & -0,2 & 5,2 \end{bmatrix} \quad -1/3,2 = -0,3125$$

c. Baris dan kolom kedua ($i=2$) dibagi dengan elemen pivot $N_{2,2}$

$$\begin{array}{l} i,i \\ \hline \text{---}> \\ i=2 \end{array} \begin{bmatrix} -0,12 & 0,1875 & 0,4 \\ 0,1875 & -0,3125 & -0,0625 \\ 0,4 & -0,0625 & 5,2 \end{bmatrix} \quad \begin{array}{l} 0,6/3,2=0,1875 \text{ untuk } j=1 \\ -0,2/3,2=-0,0625 \text{ untuk } j=3 \end{array}$$

d. Sisanya baris dan kolom untuk posisi pivot

$$\begin{array}{l} j,k \\ \hline \text{---}> \\ i=2 \end{array} \begin{bmatrix} -0,3125 & 0,1875 & 0,4375 \\ 0,1875 & -0,3125 & -0,0625 \\ 0,4375 & -0,0625 & 5,1875 \end{bmatrix} = p$$

dengan $-0,2 - (0,6 \times [0,6]/3,2) = -0,3125$ untuk $j,k=1,1$
 $0,4 - (0,6 \times [-0,2]/3,2) = 0,4375$ untuk $j,k=1,3$
 $5,2 - (-0,2 \times [-0,2]/3,2) = 5,1875$ untuk $j,k=3,3$

SIMBOL ALJABAR UNTUK SWP DALAM MATRIKS 3X3

a. Original matrix M.

$$M = \begin{bmatrix} A & B & C \\ B' & D & E \\ C' & E' & F \end{bmatrix} = \begin{bmatrix} A & B & C \\ B' & D & E \\ C' & E' & F \end{bmatrix} = \begin{bmatrix} J & K \\ K' & F \end{bmatrix} = \begin{bmatrix} M_{11} & M_{12} & M_{13} \\ M_{21} & M_{22} & M_{23} \\ M_{31} & M_{32} & M_{33} \end{bmatrix}$$

b. $N = \text{SWP}[1] M$.

$$N = \begin{bmatrix} -A^{-1} & A^{-1}B & A^{-1}C \\ B'A^{-1} & D - B'A^{-1}B & E - B'A^{-1}C \\ C'A^{-1} & E' - C'A^{-1}B & F - C'A^{-1}C \end{bmatrix} = \begin{bmatrix} N_{11} & N_{12} & N_{13} \\ N_{21} & N_{22} & N_{23} \\ N_{31} & N_{32} & N_{33} \end{bmatrix}$$

c. $P = \text{SWP}[2] N = \text{SWP}[1, 2] M$.

$$P = \begin{bmatrix} Q & R & S \\ R' & T & U \\ S' & U' & V \end{bmatrix} = \begin{bmatrix} W & G \\ G' & V \end{bmatrix} = \begin{bmatrix} P_{11} & P_{12} & P_{13} \\ P_{21} & P_{22} & P_{23} \\ P_{31} & P_{32} & P_{33} \end{bmatrix} = \begin{bmatrix} -J^{-1} & J^{-1}K \\ KJ^{-1} & F - KJ^{-1}K \end{bmatrix}$$

$$= \begin{bmatrix} (-A^{-1}) - (A^{-1}B)(D - B'A^{-1}B)^{-1}(B'A^{-1}) & (A^{-1}B)(D - B'A^{-1}B)^{-1} & (A^{-1}C) - (A^{-1}B)(D - B'A^{-1}B)^{-1}(E - B'A^{-1}C) \\ (D - B'A^{-1}B)^{-1}(B'A^{-1}) & (D - B'A^{-1}B)^{-1} & (E - B'A^{-1}C) \\ (C'A^{-1}) - (E' - C'A^{-1}B)(D - B'A^{-1}B)^{-1}(B'A^{-1}) & (E' - C'A^{-1}B)(D - B'A^{-1}B)^{-1} & (F - C'A^{-1}C) - (E' - C'A^{-1}B)(D - B'A^{-1}B)^{-1}(E - B'A^{-1}C) \end{bmatrix}$$

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C PROGRAM BEATON'S SWP
  DIMENSION A(3,3), B(3,3)
  DATA A/ 5.,3.,2.,
&         3.,5.,1.,
&         2.,1.,6. /
  DATA N /3/
  DATA KOUT /6/
  WRITE(*, '(24(/))')
1000 FORMAT(1X,3F8.4)
  WRITE(KOUT,1001)
1001 FORMAT(1X,'A')
  WRITE(KOUT,1000)A
  I=1
  CALL SWP(A,N,B,I)
  WRITE(KOUT,1002)
1002 FORMAT(/,1X,'SWP[1]A')
  WRITE(KOUT,1000)B
  I=2
  CALL SWP(B,N,A,I)
  WRITE(KOUT,1003)
1003 FORMAT(/,1X,'SWP[1,2]A')
  WRITE(KOUT,1000)A
  I=3
  CALL SWP(A,N,B,I)
  WRITE(KOUT,1004)
1004 FORMAT(/,1X,'B=SWP[1,2,3]A')
  WRITE(KOUT,1000)B
  PAUSE
  WRITE(*, '(24(/))')
  I=3
  CALL RSW(B,N,A,I)
  WRITE(KOUT,1005)
1005 FORMAT(/,1X,'RSW[3]B')
  WRITE(KOUT,1000)A
  I=2
  CALL RSW(A,N,B,I)
  WRITE(KOUT,1006)
1006 FORMAT(/,1X,'RSW[2,3]B')
  WRITE(KOUT,1000)B
  I=1
  CALL RSW(B,N,A,I)
  WRITE(KOUT,1007)
1007 FORMAT(/,1X,'B=RSW[1,2,3]A')
  WRITE(KOUT,1000)A
  STOP
  END

```

```

C
  SUBROUTINE SWP(A,N,B,I)
  REAL A(N,N), B(N,N)
  B(I,I) = -1/A(I,I)
  DO 100 J=1,N
    IF(J.EQ.I) GO TO 100
    B(I,J) = A(I,J)/A(I,I)
    B(J,I) = B(I,J)
100 CONTINUE
  DO 210 J=1,N
    IF(J.EQ.I) GO TO 210
    DO 200 K=1,J
      IF(K.EQ.I) GO TO 200
      B(J,K) = A(J,K)-A(J,I)*B(I,K)
      B(K,J) = B(J,K)
200 CONTINUE
210 CONTINUE

```

```
RETURN  
END
```

C

```
SUBROUTINE RSW(B,N,A,I)  
REAL A(N,N), B(N,N)  
A(I,I) = -1/B(I,I)  
DO 103 J=1,N  
  IF(J.EQ.I) GO TO 103  
  A(I,J) = -B(I,J)/B(I,I)  
  A(J,I) = A(I,J)  
103 CONTINUE  
DO 213 J=1,N  
  IF(J.EQ.I) GO TO 213  
  DO 203 K=1,N  
    IF(K.EQ.I) GO TO 203  
    A(J,K) = B(J,K)+B(J,I)*A(I,K)  
    A(K,J) = A(J,K)  
203 CONTINUE  
213 CONTINUE  
RETURN  
END
```



A

5.0000	3.0000	2.0000
3.0000	5.0000	1.0000
2.0000	1.0000	6.0000

SWP[1]A

-0.2000	0.6000	0.4000
0.6000	3.2000	-0.2000
0.4000	-0.2000	5.2000

SWP[1,2]A

-0.3125	0.1875	0.4375
0.1875	-0.3125	-0.0625
0.4375	-0.0625	5.1875

B=SWP[1,2,3]A

-0.3494	0.1928	0.0843
0.1928	-0.3133	-0.0120
0.0843	-0.0120	-0.1928



RSW[3]B

-0.3125	0.1875	0.4375
0.1875	-0.3125	-0.0625
0.4375	-0.0625	5.1875

RSW[2,3]B

-0.2000	0.6000	0.4000
0.6000	3.2000	-0.2000
0.4000	-0.2000	5.2000

B=RSW[1,2,3]A

5.0000	3.0000	2.0000
3.0000	5.0000	1.0000
2.0000	1.0000	6.0000

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C PROGRAM LATIH SWP
REAL *4 Z(20,20), T(20,20), A(20,20)
DIMENSION B(20,20)
WRITE(*, '(24(/))')
WRITE(*, '(1X,A,\)') 'BANYAKNYA DATA MASING-MASING X & Y ?'
READ(*, '(BN,I2)') N
WRITE(*, '(1X,A,\)') 'BANYAKNYA VARIABEL X ?'
READ(*, '(BN,I2)') M
L=M+2

C
C PEMASUKAN DATA MATRIK Z
C =====
WRITE(*, '(1X,A)') 'KOLOM PERTAMA DIISI 1.'
WRITE(*, '(1X,A)') 'KOLOM TENGAH DIISI NILAI VARIABEL X'
WRITE(*, '(1X,A)') 'KOLOM TERAKHIR DIISI NILAI VARABEL Y'
DO 110 J=1,L
    DO 100 I=1,N
        WRITE(*, '(1X,\'Z(\',I2,\',\',I2,\')?\'',\)') I,J
        READ(*, '(F9.3)') Z(I,J)
100    CONTINUE
110 CONTINUE

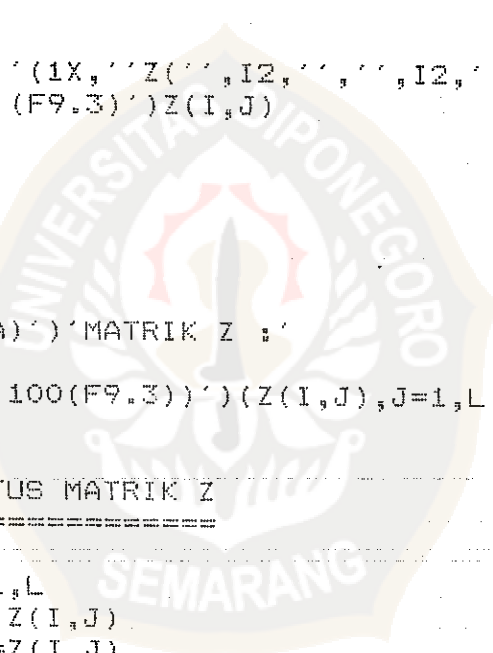
C
C CETAK MATRIK Z
C =====
WRITE(*,*)
WRITE(*, '(/,1X,A)') 'MATRIK Z : '
DO 200 I=1,N
    WRITE(*, '(1X,100(F9.3))') (Z(I,J),J=1,L)
200 CONTINUE

C
C MATRIK T = TRANFUS MATRIK Z
C =====
DO 310 I=1,N
    DO 300 J=1,L
        DUMMY= Z(I,J)
        T(J,I)=Z(I,J)
        T(J,I)=DUMMY
300    CONTINUE
310 CONTINUE

C
C CETAK MATRIK T
C =====
WRITE(*,*)
WRITE(*, '(/,1X,A)') 'MATRIK T : '
DO 400 I=1,L
    WRITE(*, '(1X,100(F9.3))') (T(I,J),J=1,N)
400 CONTINUE

C
C MATRIK A = MATRIK T DIKALIKAN MATRIK Z
C =====
DO 520 I=1,L
    DO 510 J=1,L
        A(I,J)=0
        DO 500 K=1,N
            A(I,J) = A(I,J)+T(I,K)*Z(K,J)
500    CONTINUE
510    CONTINUE
520 CONTINUE

```



```

C
C   CETAK MATRIK A
C   =====
C   WRITE(*,*)
C   WRITE(*, '(/,1X,A)') 'MATRIK A : '
C   DO 600 I=1,L
C       WRITE(*, '(1X,100(F9.3))')(A(I,J),J=1,L)
600 CONTINUE
C
C   PENGOPERASIAN SWP
C   =====
C   I=1
C   CALL SWP(A,L,B,I)
C   WRITE(*,*)
C   WRITE(*, '(/,1X,A)') 'SWP[1]A : '
C   DO 700 I=1,L
C       WRITE(*, '(1X,100(F9.3))')(B(I,J),J=1,L)
700 CONTINUE
C   I=2
C   CALL SWP(B,L,A,I)
C   WRITE(*,*)
C   WRITE(*, '(/,1X,A)') 'SWP[1,2]A : '
C   DO 800 I=1,L
C       WRITE(*, '(1X,100(F9.3))')(A(I,J),J=1,L)
800 CONTINUE
C   END
C
C   SUBROUTINE SWP(A,L,B,I)
C   REAL*4 A(20,20), B(20,20)
C   B(I,I) = -1/A(I,I)
C   DO 900 J=1,L
C       IF(J.EQ.I) GO TO 900
C       B(I,J) = A(I,J)/A(I,I)
C       B(J,I) = B(I,J)
900 CONTINUE
C   DO 920 J=1,L
C       IF(J.EQ.I) GO TO 920
C       DO 910 K=1,J
C           IF(K.EQ.I) GO TO 910
C           B(J,K) = A(J,K)-A(J,I)*B(I,K)
C           B(K,J) = B(J,K)
910 CONTINUE
920 CONTINUE
C   RETURN
C   END

```


BANYAKNYA DATA MASING-MASING X & Y ? 3

BANYAKNYA VARIABEL X ? 1

KOLOM PERTAMA DIISI 1.

KOLOM TENGAH DIISI NILAI VARIABEL X

KOLOM TERAKHIR DIISI NILAI VARIABEL Y

Z(1, 1)?1.

Z(2, 1)?1.

Z(3, 1)?1.

Z(1, 2)?56.

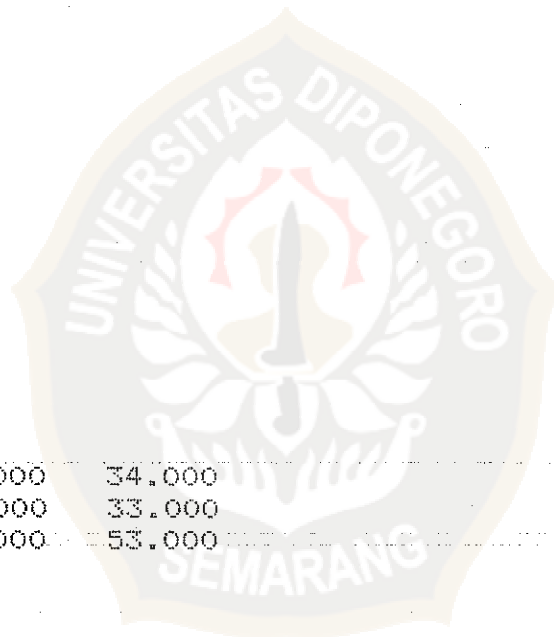
Z(2, 2)?33.

Z(3, 2)?55.

Z(1, 3)?34.

Z(2, 3)?33.

Z(3, 3)?53.



MATRIK Z :

1.000 56.000 34.000

1.000 33.000 33.000

1.000 55.000 53.000

MATRIK T :

1.000 1.000 1.000

56.000 33.000 55.000

34.000 33.000 53.000

MATRIK A :

3.000	144.000	120.000
144.000	7250.000	5908.000
120.000	5908.000	5054.000

SWF[1]A :

-0.333	48.000	40.000
48.000	338.000	148.000
40.000	148.000	254.000

SWF[1,2]A :

-7.150	0.142	18.982
0.142	-0.003	0.438
18.982	0.438	189.195

