

Lampiran A

Program Dekomposisi L U dengan bahasa Pascal
(Compiler Turbo Pascal versi 5.5)

(* PROGRAM METODE DEKOMPOSISI L-U oleh HERI AGUS SUSANTO*)
USES CRT;

Type

larik_1 = Array[1..10] of real;
larik_2 = Array[1..10,1..10] of real;

Var

N : Integer;
X,C : larik_1;
A : larik_2;
lagi : char;

(*----- MEMBACA DATA -----*)

Procedure Baca_Data (N : integer;
Var C : larik_1;
Var A : larik_2);

Var

i,j : integer;

Begin

Repeat

Write(' BANYAK PERSAMAAN = ');Readln(N);Writeln;

Until N>1;

Write(' MATRIK A = ');

For i := 1 to N do

Begin

For j := 1 to N do

Begin

Read (A[i,j]);

End;

Writeln;

End;

Writeln;

Writeln(' KONSTANTA C = ');

For i := 1 to N do

Begin

Read (C[i]);

End;

Writeln;

End;

{ akhir procedure baca_data }

(*----- MEMECAH KOEFISIEN -----*)

Procedure Dekomposisi (N : integer;
Var A : larik_2);

Var

i,j,k : integer;
jumlah : real;

Begin

For j := 2 to N do

Begin

A[1,j] := A[1,j]/A[1,1];

End;

For j := 2 to N-1 do

Begin

for i := j to N do

Begin

jumlah := 0.0;

For k := 1 to j-1 do

Begin

jumlah := jumlah + A[i,k]*A[k,j];

End;

A[i,j] := A[i,j] - jumlah;

End;

For k := j+1 to N do

Begin

jumlah := 0.0;

For i := 1 to j-1 do

Begin

jumlah := jumlah + A[j,i]*A[i,k];

End;

A[j,k] := (A[j,k]-jumlah) / A[j,j];

End;

jumlah := 0.0;

For k := 1 to N-1 do

Begin

jumlah := jumlah + A[N,k]*A[k,N];

End;

A[N,N] := A[N,N] - jumlah;

End;

WriteLn('Matrik Hasil Dekomposisi = ');

For i := 1 to N do

Begin

For j := 1 to N do

Begin

Write(A[i,j]);

End;

WriteLn;

End;

End;

{ akhir procedure dekomposisi }

```
(*----- MENCARI SOLUSI -----*)
```

```
Procedure Solusi( N      : integer; Var A   : larik_2;
```

```
                  Var X   : larik_1);
```

```
Var
```

```
    i,j      : integer;
```

```
    jumlah  : real;
```

```
Begin
```

```
    X[1] := C[1]/A[1,1];
```

```
    For i := 2 to N do
```

```
    Begin
```

```
        jumlah := 0.0;
```

```
        For j := 1 to i-1 do
```

```
        Begin
```

```
            jumlah := jumlah + A[i,j]*X[j];
```

```
        End;
```

```
        X[i] := ( C[i] - jumlah ) / A[i,i];
```

```
    End;
```

```
    For i := n-1 downto 1 do
```

```
    Begin
```

```
        jumlah := 0.0;
```

```
        For j := i+1 to N do
```

```
        Begin
```

```
            jumlah := jumlah + A[i,j]*X[j];
```

```
        End;
```

```
        X[i] := X[i] - jumlah;
```

```
    End;
```

```
    Writeln;writeln;
```

```
    Writeln('SOLUSI PERSAMAAN =');
```

```
    For i := 1 to N do
```

```
    Begin
```

```
        Write(' X[',i,'] = ',X[i];
```

```
    End;
```

```
End;
```

```
{ akhir procedure solusi }
```

(*----- PROGRAM UTAMA -----*)

BEGIN

Repeat

clrscr ;

Baca_Data(N,C,A);

Dekomposisi(N,A);

Solusi(N,A,X);

Writeln;Writeln;Writeln;

Write('Ingin lagi?(Y atau T)'); readln(lagi);

Until lagi in ['T','t'];

END.

Banyak Persamaan=3

MATRIKS A adalah

$A(1,1) = 2.000$

$A(1,2) = 6.000$

$A(1,3) = 2.000$

$A(2,1) = -3.000$

$A(2,2) = -8.000$

$A(2,3) = 0.000$

$A(3,1) = 4.000$

$A(3,2) = 9.000$

$A(3,3) = 2.000$

Konstanta C adalah

$C(1) = 2.000$

$C(2) = 2.000$

$C(3) = 3.000$

Matriks Hasil Dekomposisi

2.000 3.000 1.000

-3.000 1.000 -3.000

4.000 -3.000 7.000

Solusi Persamaan

$X(1) = 2.000$

$X(2) = -1.000$

$X(3) = 2.000$