

LAMPIRAN 8

Kode Program Makro SPPM Dengan *EMME/2* (grsppm.txt)

```

~+~#o=39#~p=2033#reports=NUL
~+~#2.41#1#y#ul3#0# #all#4#q#2.41#1#y#us3#0# #all#all#4#q
~r10=0
~/~%1% adalah Beta awal dan %2% adalah Gama awal
~/Inisialisasi awal Beta dan Gama ms97=Beta ms41=Gama
~r11=0
~+~#3.21#1#y#ms40#n#%1%# # #2#q#
~+~#3.21#1#y#ms41#n#%2%# # #2#q#
~/~:H
~+~#3.21#1#y#ms53#n#%3%# # #2#q#
~+~#3.21#1#y#ms54#n#%4%# # #2#q#
~:G
~/Iterasi ke %ms92% *****
~/DEFINISIKAN CID dari Fungsi Cidk
~+~#3.21#1#y#mf5#n#(mf65+mf75)/2# # #n#2#q#
~+~#3.21#1#y#mf80#n#exp(-1*ms40*mf5)*(mf5>0)# # #n#2#q#
3.21
1
y
md51
n
1

n
2
q
3.21
1
y
mo52
n
10

n
2
q
3.21
1
y
md52
n
10

```

```
n
2
q
~/AWAL ITERASI Ai dan Bd
~/*****
~:A
3.21
1
y
mo50
n
md51*md1*mf80
```

```
n

2
q
3.21
1
y
mo51
n
1/mo50
```

```
n
2
q
3.21
1
y
ms50
n
abs(mo51-mo52)
```

```
n

2
q
~:B
3.21
1
y
md50
n
```

mo51*mo1*mf80

n

2

q

3.21

1

y

md51

n

1/md50

n

2

q

3.21

1

y

ms51

n

abs(md51-md52)

n

2

q

~r1=%ms50%

~r2=%ms51%

~?!r1<0.001

~+#3.21#1#y#mo52#n#mo51# # #n#2#q#

~?!r2<0.001

~+#3.21#1#y#md52#n#md51# # #n#2#q#~\$A

3.21

1

y

mf81

n

-1*mf5*mf80*(mf5>0)

n

2

q

3.21

1
y
mf82
n
(mf5^2)*mf80*(mf5>0)

n
2
q
3.21
1
y
md54
n
1

n
2
q
3.21
1
y
mo55
n
10

n
2
q
3.21
1
y
md55
n
10

n
2
q
~/AWAL ITERASI doAi/doBeta dan doBd/doAlpha
~/*****
~:C
3.21
1

y
mo53
n
 $md1*((md54*mf80)+(md51*mf81))$

n

2
q
3.21
1
y
mo54
n
 $-1*(mo51^2)*mo53$

n
2
q
~:D
3.21
1
y
md53
n
 $mo1*((mo54*mf80)+(mo51*mf81))$

n

2
q
3.21
1
y
md54
n
 $-1*(md51^2)*md53$

n
2
q
3.21
1
y

ms50
n
abs(mo54-mo55)

n
2
q
3.21
1
y
ms51
n
abs(md54-md55)

n
2
q
~r1=%ms50%
~r2=%ms51%
~?!r1<0.001
~+ #3.21#1#y#mo55#n#mo54# # #n#2#q#
~?!r2<0.001
~+ #3.21#1#y#md55#n#md54# # #n#2#q#~\$C
3.21
1
y
md57
n
1

n
2
q
3.21
1
y
mo58
n
10

n
2

q
3.21
l
y
md58
n
10

n
2
q
~/AWAL ITERASI do2Ai/doBeta2 dan do2Bd/doBeta2
~/*****
~:E
3.21
l
y
mo56
n
 $md1*(md57*mf80+2*md54*mf81+md51*mf82)$

n
2
q
3.21
l
y
mo59
n
 $md1*(md54*mf80+md51*mf81)$

n
2
q
3.21
l
y
mo57
n
 $(2*((mo51)^3)*(mo59^2))-((mo51^2)*mo56)$

n

2
q
~:F
3.21
1
y
md56
n
 $\text{mo1} * (\text{mo57} * \text{mf80} + 2 * \text{mo54} * \text{mf81} + \text{mo51} * \text{mf82})$

n

2
q
3.21
1
y
md59
n
 $\text{mo1} * (\text{mo54} * \text{mf80} + \text{mo51} * \text{mf81})$

n

2
q
3.21
1
y
md57
n
 $(2 * ((\text{md51})^3) * (\text{md59}^2)) - ((\text{md51}^2) * \text{md56})$

n
2
q
3.21
1
y
ms50
n
 $\text{abs}(\text{mo57} - \text{mo58})$

n

2
q
3.21
1
y
ms51
n
md57-md58

n

2
q
~r1=%ms50%
~r2=%ms51%
~?!r1<0.001
~+#3.21#1#y#mo58#n#mo57# # #n#2#q#
~?!r2<0.001
~+#3.21#1#y#md58#n#md57# # #n#2#q#~\$E
~/Mencari doTid/doBeta (mf83) *****
3.21
1
y
mf83
n
 $mo1*md1*(mo51*md51*mf81+mf80*(mo54*md51+mo51*md54))$

n
2
q
3.21
1
y
mf86
n
 $mf80*(mo57*md51+2*mo54*md54+mo51*md57)$

n
1
q
~/Mencari do2Tid/doBeta2 (mf84) *****
3.21
1
y
mf84

n
 $mo1*md1*(mo51*md51*mf82+2*mf81*(mo54*md51+mo51*md54)+mf86)$

~/Mencari Tid (mf85) *****

n
 2
 q
 3.21
 l
 y
 mf85
 n
 $mo51*md51*mo1*md1*mf80$

n
 2
 q
 ~/Cari sub doTid1/doGamma
 3.21
 l
 y
 mf71
 n
 $(exp(-1*ms41*mf65)+exp(-1*ms41*mf75))^2$

n
 2
 q
 ~/Cari doTid1/doGamma
 3.21
 l
 y
 mf24
 n
 $mf85*exp(-1*ms41*mf75)*exp(-1*ms41*mf65)*((mf75-mf65)/mf71)$

n
 2
 q
 ~/Cari sub doTid2/doGamma
 3.21
 l
 y
 mf71

$$\frac{n}{(\exp(-1*ms41*mf65)+\exp(-1*ms41*mf75))^2}$$

$$\frac{n}{2} \frac{q}{\sim/Cari\ doTid2/doGamma}$$

$$\frac{3.21}{1} \frac{y}{mf25} \frac{n}{mf85*\exp(-1*ms41*mf65)*\exp(-1*ms41*mf75)*((mf65-mf75)/mf71)}$$

$$\frac{n}{2} \frac{q}{\sim/*****} \frac{\sim/Cari\ do2Tid1\ gamma}{3.21} \frac{1}{1} \frac{y}{mf99} \frac{n}{(\exp(-1*ms41*mf75)-\exp(-1*ms41*mf65))/(\exp(-1*ms41*mf65)+\exp(-1*ms41*mf75))^3}$$

$$\frac{n}{2} \frac{q}{3.21} \frac{1}{1} \frac{y}{mf15} \frac{n}{mf85*\exp(-1*ms41*mf65)*\exp(-1*ms41*mf75)*(mf75-mf65)^2*mf99}$$

$$\frac{n}{2} \frac{q}{\sim/*****} \frac{\sim/Cari\ do2Tid2\ gamma2}{3.21} \frac{1}{1}$$

$$\frac{y_{mf96}}{n} \frac{((\exp(-1*ms41*mf65)-\exp(-1*ms41*mf75)))}{n}$$

$$\frac{n^2}{q^{3.21}} \frac{1}{y_{mf99}} \frac{n}{(mf96)/(\exp(-1*ms41*mf65)+\exp(-1*ms41*mf75))^3}$$

$$\frac{n^2}{q^{3.21}} \frac{1}{y_{mf16}} \frac{n}{mf85*\exp(-1*ms41*mf65)*\exp(-1*ms41*mf75)*(mf65-mf75)^2*mf99}$$

$$\frac{n^2}{q^{3.21}} \frac{1}{y_{mf99}} \frac{n}{(\exp(-1*ms41*mf65)*\exp(-1*ms41*mf75))*(mf75-mf65)}$$

~/*~

~/Cari do2Tid1 doBetaGama

$$\frac{n^2}{q^{3.21}} \frac{1}{y_{mf11}}$$

n
mf83*(mf99/(exp(-1*ms41*mf65)+exp(-1*ms41*mf75))^2)

n
2
q
~/*****
~/Cari do2Tid2 doBetaGama
3.21
1
y
mf99
n
(exp(-1*ms41*mf65)*exp(-1*ms41*mf75))*(mf65-mf75)

n
2
q
3.21
1
y
mf13
n
mf83*(mf99/(exp(-1*ms41*mf65)+exp(-1*ms41*mf75))^2)

n
2
q
~/*****
~/Cari do2Tid1 beta
3.21
1
y
mf44
n
mf84*(exp(-1*ms41*mf65)/(exp(-1*ms41*mf65)+exp(-1*ms41*mf75)))

n
2
q
~/Cari do2Tid2 beta
3.21
1
y

mf55
n
$$mf84 * (\exp(-1 * ms41 * mf75) / (\exp(-1 * ms41 * mf65) + \exp(-1 * ms41 * mf75)))$$

n
2
q
~/Cari doTid1 beta
3.21
1
y
mf23
n
$$mf83 * (\exp(-1 * ms41 * mf65) / (\exp(-1 * ms41 * mf65) + \exp(-1 * ms41 * mf75)))$$

n
2
q
~/Cari doTid2 beta
3.21
1
y
mf34
n
$$mf83 * (\exp(-1 * ms41 * mf75) / (\exp(-1 * ms41 * mf65) + \exp(-1 * ms41 * mf75)))$$

n
2
q
~/*****
~/Membuat mf22 (Tid1) dari Tid
3.21
1
y
mf22
n
$$mf85 * (\exp(-1 * ms41 * mf65) / (\exp(-1 * ms41 * mf65) + \exp(-1 * ms41 * mf75)))$$

n
2
q
~/Membuat mf33 (Tid2) dari Tid
3.21
1

y
mf33
n
$$mf85 * (\exp(-1 * ms41 * mf75) / (\exp(-1 * ms41 * mf65) + \exp(-1 * ms41 * mf75)))$$

n
2
q
~/GRSPPMC (Iterasi Assignment)
~/2
~/
3.12
3
ms1
1
0
q
3.12
3
ms3
1
0
q
3.12
3
ms5
1
0
q
3.12
3
ms7
1
0
q
3.12
3
ms9
1
0
q
3.12
3
ms11
1
0
q

3.12
3
ms13
1
0
q
3.12
3
ms15
1
0
q
3.12
3
ms17
1
0
q
3.21
1
y
mf90
n
0

n
2
q
3.21
1
y
mf91
n
0

n
2
q
~/Matrix 0 1 for Transit from Matrix Transit mf10
~/to obtain pidl Transit
~+#3.21#1#y#mf3#n#1*(mf33>0)# # #n#1# #q#
~y=%ms53%
~:L
~/Makro untuk isian ms93 (observed flow) setiap link y
~+#2.41#1#n#ul2# #ul1=%y%# #5#4#ms93# # #q
~x=%ms93%


```

~/Jika ms93=0 fungsi lompat ke ~:M
~+#+~?x=0#~$>M
~/Makro untuk isian ms93 (observed flow) setiap link y
~/Assign transit 0 1 mf3 (Tid Bus 0 1) to the network in order to obtain the
calculated
~/mf91 (pidl matrix transit)
~/uses the principle of "selected element analysis"
~/i.e. sets @pidb = 1 for the current link and sets @pidb = 0 for other links).
~+2.41#1#y#@pidb#n#1*(us1==%y%)# #all#all#4#q
~/transit assignment procedure.
~+5.11#2
~+#+~?q=2#2
~+mf3#mf76#n# # # # # #bp#1#1
~+1#1#0.03#0.03#0.03#0.03#y
~/mf91 adalah pidl bus
~+#+#@pidb# # #3#.max.#1,1# #mf91#n# #
~+5.31#2
~/Assign auto mf22 (Tid Car) to the network in order to obtain the calculated
~/traffic flows (volau) and mf90 (pidl matrix).
~/uses the principle of "selected link analysis"
~/i.e. sets @pibc = 1 for the current link and sets @pibc = 0 for other links).
~/mf92 is also used for obtaining mf96
~+2.41#1#y#@pidc#n#1*(ul1==%y%)# #all#4#q
~+5.11#1
~+#+~?q=2#2
~+1#5#mf22# #mf2#mf66#n
~+6#@pidc#.max.#0.5,1.5#mf90#n#4
~+#+~?q=1#y
~+15#0.5#0.5
~+5.21#2
~/Tid1*pidl1
3.21
1
y
ms94
n
mf22*mf90

```

```

~/Tid2*pidl2
n

```

```

2
q
3.21
1
y

```

ms95
n
mf33*mf91

n

2
q
2.41
l
n
ul2

~/ul1 = no link
ul1=%y%

5
4
ms93

l
q
2.41
l
n
us2

~/ut1 == no line sesuai no network
all
ul1=%y%

5
4
ms97

l
q
3.21
l
y
ms20
n
mf23*mf90

n

2

q

3.21

l

y

ms21

n

mf34*mf91

n

2

q

3.21

l

y

ms22

n

mf24*mf90

n

2

q

3.21

l

y

ms23

n

mf35*mf91

n

2

q

3.21

l

y

ms26
n
mf44*mf90

n

2
q
3.21
l
y
ms27
n
mf55*mf91

n

2
q
3.21
l
y
ms28
n
mf15*mf90

n

2
q
3.21
l
y
ms29
n
mf16*mf91

n

2

q
3.21
l
y
ms32
n
mf11*mf90

n

2
q
3.21
l
y
ms33
n
mf13*mf91

n

2
q
3.21
l
y
~/doS/doB
ms2
n
 $ms1+(2*((ms94-ms93)*ms20+(ms95-ms97)*ms21))$

2
q
3.21
l
y
~/doS/doGama1
ms4
n
 $ms3+(2*((ms94-ms93)*ms22+(ms95-ms97)*ms23))$

2

q
3.21
l
y
~/do2S/doB2
ms8
n
 $ms7+(2*(((ms94-ms93)*ms26+ms20^2)+((ms95-ms97)*ms27+ms21^2)))$

2
q
3.21
l
y
~/do2S/doGama12
ms10
n
 $ms9+(2*(((ms94-ms93)*ms28+ms22^2)+((ms95-ms97)*ms29+ms23^2)))$

2
q
3.21
l
y
~/do2S/doBdoGama1
ms14
n
 $ms13+(2*(((ms94-ms93)*ms32+ms20*ms22)+((ms95-ms97)*ms33+ms21*ms23)))$

2
q
3.21
l
y
ms1
n
ms2

2
q
3.21
l
y

ms3
n
ms4

2
q
3.21
l
y
ms7
n
ms8

2
q
3.21
l
y
ms9
n
ms10

2
q
3.21
l
y
ms13
n
ms14

2
q
~:M
~?!y=%ms54%
~+#~y+1#~\$L
~/GAUSS JORDAN
3.21
l
y
ms81
n
ms8/ms8

2
q
3.21
1
y
ms82
n
ms14/ms8

2
q
3.21
1
y
ms70
n
 $-1*(ms2/ms8)$

2
q
3.21
1
y
ms84
n
 $ms14-(ms14/ms81)*ms81$

2
q
3.21
1
y
ms85
n
 $ms10-(ms14/ms81)*ms82$

2
q
3.21
1
y
ms71
n

$$-1*(ms4-(ms14/ms81)*ms70)$$

$$\frac{2}{q^{3.21} \cdot l \cdot y \cdot ms65 \cdot n \cdot (ms85/ms85)}$$

$$\frac{2}{q^{3.21} \cdot l \cdot y \cdot ms91 \cdot n \cdot (ms71/ms85)}$$

$$\frac{2}{q^{3.21} \cdot l \cdot y \cdot ms62 \cdot n \cdot ms82-(ms82/ms65)*ms65}$$

$$\frac{2}{q^{3.21} \cdot l \cdot y \cdot ms90 \cdot n \cdot (ms70-(ms82/ms65)*ms91)}$$

$$\frac{2}{q^{3.21} \cdot l \cdot y \cdot ms47 \cdot n \cdot (ms40+ms90) \cdot \# \# \# 2 \cdot q \cdot \# \sim + \# 3.21 \cdot \# 1 \cdot y \cdot ms48 \cdot n \cdot (ms41+ms91) \cdot \# \# \# 2 \cdot q \cdot \# \sim + \# 3.21 \cdot \# 1 \cdot y \cdot ms50 \cdot n \cdot abs(ms90) \cdot \# \# \# 2 \cdot q \cdot \#}$$

```
~+#3.21#1#y#ms51#n#abs(ms91)# # #2#q#
~+#~r11+1#
~/Jumlah Iterasi h dan k (loop ke satu)
~+#3.21#1#y#ms92#n#%r11%# # #2#q#
~r1=%ms50%
~r2=%ms51%
~r3=%ms92%
~/~?!r2<0.0001
~+#3.21#1#y#ms41#n#ms48# # #2#q#
~/~?!r1<0.0001
~?!r3>0
~+#3.21#1#y#ms40#n#ms47# # #2#q#~$G
~/Iterasi ke %ms92% *****
```