

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 ms201=Gama
~r11=0
~+3.21#1#y#ms200#n#%1%# # #2#q#
~+3.21#1#y#ms201#n#%2%# # #2#q#
~/~:H
~+3.21#1#y#ms222#n#%3%# # #2#q#
~+3.21#1#y#ms223#n#%4%# # #2#q#
~:G
~/Iterasi ke %ms92% *****
~/DEFINISKAN CID dari Fungsi Cidk
~+3.21#1#y#mf5#n#(mf65+mf75)/2# # #n#2#q#
~+3.21#1#y#mf80#n#exp(-1*ms200*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<0.0001
~+3.21#1#y#mo52#n#mo51# # #n#2#q#
~?!r2<0.0001
~+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#1#0# #n#2#q#

~+3.21#1#y#md58#n#1#0# #n#2#q#

~/AWAL ITERASI do2Ai/doBeta2 dan do2Bd/doBeta2

~/*****

~:E

~+3.21#1#y#mo56#n#md1*(md57*mf80+2*md54*mf81+md51*mf82)# #n# #2#q#

~+3.21#1#y#mo59#n#md1*(md54*mf80+md51*mf81)# #n# #2#q#

~+3.21#1#y#mo57#n#(2*((mo51)^3)*(mo59^2))-((mo51^2)*mo56)# #n#2#q#

~:F

~+3.21#1#y#md56#n#mo1*(mo57*mf80+2*mo54*mf81+mo51*mf82)# #n# #2#q#

~+3.21#1#y#md59#n#mo1*(mo54*mf80+mo51*mf81)# #n# #2#q#

~+3.21#1#y#md57#n#(2*((md51)^3)*(md59^2))-((md51^2)*md56)# #n#2#q#

~+3.21#1#y#ms50#n#abs(mo57-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)# #n#

~/Mencari Tid (mf85) ****

n#2#q#

~+3.21#1#y#mf85#n#mo51*md51*mo1*md1*mf80#n#2#q#

```

~/Cari sub doTid1/doGamma
~+3.21#1#y#mf71#n#(exp(-1*ms201*mf65)+exp(-1*ms201*mf75))^2# #
#n#2#q#
~/Cari doTid1/doGamma
~+3.21#1#y#mf24#n#mf85*exp(-1*ms201*mf75)*exp(-
1*ms201*mf65)*((mf75-mf65)/mf71)# # #n#2#q#
~/Cari sub doTid2/doGamma
~+3.21#1#y#mf71#n#(exp(-1*ms201*mf65)+exp(-1*ms201*mf75))^2# #
#n#2#q#
~/Cari doTid2/doGamma
~+3.21#1#y#mf25#n#mf85*exp(-1*ms201*mf65)*exp(-
1*ms201*mf75)*((mf65-mf75)/mf71)# # #n#2#q#
~/*****
~/Cari do2Tid1 gamma
~+3.21#1#y#mf99#n#(exp(-1*ms201*mf75)-exp(-1*ms201*mf65))/(exp(-
1*ms201*mf65)+exp(-1*ms201*mf75))^3# # #n#2#q#
~+3.21#1#y#mf15#n#mf85*exp(-1*ms201*mf65)*exp(-1*ms201*mf75)*(mf75-
mf65)^2*mf99# # #n#2#q#
~/*****
~/Cari do2Tid2 gamma2
~+3.21#1#y#mf96#n#((exp(-1*ms201*mf65)-exp(-1*ms201*mf75)))# #
#n#2#q#
~+3.21#1#y#mf99#n#(mf96)/(exp(-1*ms201*mf65)+exp(-1*ms201*mf75))^3#
# #n#2#q#
~+3.21#1#y#mf16#n# mf85*exp(-1*ms201*mf65)*exp(-
1*ms201*mf75)*(mf65-mf75)^2*mf99# # #n#2#q#
~/*****
~/Cari do2Tid1 doBetaGama
~+3.21#1#y#mf99#n#(exp(-1*ms201*mf65)*exp(-1*ms201*mf75))*(mf75-
mf65)# # #n#2#q#
~+3.21#1#y#mf11#n# mf83*(mf99/(exp(-1*ms201*mf65)+exp(-
1*ms201*mf75))^2)# # #n#2#q#
~/*****
~/Cari do2Tid2 doBetaGama
~+3.21#1#y#mf99#n#(exp(-1*ms201*mf65)*exp(-1*ms201*mf75))*(mf65-
mf75)# # #n#2#q#
~+3.21#1#y#mf13#n#mf83*(mf99/(exp(-1*ms201*mf65)+exp(-
1*ms201*mf75))^2)# # #n#2#q#
~/*****
~/Cari do2Tid1 beta
~+3.21#1#y#mf44#n#mf84*(exp(-1*ms201*mf65)/(exp(-1*ms201*mf65)+exp(-
1*ms201*mf75)))# # #n#2## # #q#
~/Cari do2Tid2 beta
~+3.21#1#y#mf55#n#mf84*(exp(-1*ms201*mf75)/(exp(-1*ms201*mf65)+exp(-
1*ms201*mf75)))# # #n#2#q#
~/Cari doTid1 beta
~+3.21#1#y#mf23#n#mf83*(exp(-1*ms201*mf65)/(exp(-1*ms201*mf65)+exp(-
1*ms201*mf75)))# # #n#2#q#

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~/Cari doTid2 beta
~+3.21#1#y#mf34#n#mf83*(exp(-1*ms201*mf75)/(exp(-1*ms201*mf65)+exp(-
1*ms201*mf75))) # # #n#2#q#
~/*****
~/Membuat mf22 (Tid1) dari Tid
~+3.21#1#y#mf22#n#mf85*(exp(-1*ms201*mf65)/(exp(-1*ms201*mf65)+exp(-
1*ms201*mf75))) # # #n#2#q#
~/Membuat mf33 (Tid2) dari Tid
~+3.21#1#y#mf33#n# mf85*(exp(-1*ms201*mf75)/(exp(-
1*ms201*mf65)+exp(-1*ms201*mf75))) # # #n#2#q#

~/GRSPPMC (Iterasi Assignment)
~+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=%ms222%
~: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 n#etwork 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

```

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~/Assign auto mf22 (Tid Car) to the n#etwork 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#1#n#ul2

```

```

~/ul1 = n#o link
ul1=%y%
#
5
4
ms93
#
#
1#
q#
~+2.41#
1#
n#
us2

```

```

~/ut1 == n#o line sesuai n#o n#etwork
all
ul1=%y%
#
5
4
ms97

```


 #
 1#
 q#
 ~+3.21#1#y#ms20#n#mf23*mf90# # #n# # #2#q#
 ~+3.21#1#y#ms21#n#mf34*mf91# # #n# # #2#q#
 ~+3.21#1#y#ms22#n#mf24*mf90# #n# # #2#q#
 ~+3.21#1#y#ms23#n#mf35*mf91# # #n# # #2#q#
 ~+3.21#1#y#ms26#n#mf44*mf90# # #n# # #
 ~+2.41#2#q#
 ~+3.21#1#y#ms27#n#mf55*mf91# # #n# # #2#q#
 ~+3.21#1#y#ms28#n#mf15*mf90# # #n# # #2#q#
 ~+3.21#1#y#ms29#n#mf16*mf91# # #n# # #2#q#
 ~+3.21#1#y#ms32#n#mf11*mf90# # #n# # #2#q#
 ~+3.21#1#y#ms33#n#mf13*mf91# # #n# # #2#q#
 ~+3.21#1#y#
 ~/doS/doB
 ms2
 n

$$ms1+(2*((ms94-ms93)*ms20+(ms95-ms97)*ms21))$$

2
 q
 ~+3.21#1#y#
 ~/doS/doGama1
 ms4
 n

$$ms3+(2*((ms94-ms93)*ms22+(ms95-ms97)*ms23))$$

2
 q
 ~+3.21#1#y#
 ~/do2S/doB2
 ms8
 n

$$ms7+(2*(((ms94-ms93)*ms26+ms20^2)+((ms95-ms97)*ms27+ms21^2)))$$

2
 q
 ~+3.21#1#y#
 ~/do2S/doGama12
 ms10
 n

$$ms9+(2*(((ms94-ms93)*ms28+ms22^2)+((ms95-ms97)*ms29+ms23^2)))$$

```

2
q
~+3.21#1#y#
~/do2S/doBdoGama1
ms14
n
ms13+(2*((ms94-ms93)*ms32+ms20*ms22)+((ms95-
ms97)*ms33+ms21*ms23)))

```

```

2
q
~+3.21#1#y#ms1#n#ms2# # #2#q#
~+3.21#1#y#ms3#n#ms4# # #2#q#
~+3.21#1#y#ms7#n#ms8# # #2#q#
~+3.21#1#y#ms9#n#ms10# # #2#q#
~+3.21#1#y#ms13#n#ms14# # #2#q#
~:M
~?!y=%ms223%
~+#~y+1#~$L
~/GAUSS JORDAN
~+3.21#1#y#ms81#n#ms8/ms8# # #2#q#
~+3.21#1#y#ms82#n#ms14/ms8# # #2#q#
~+3.21#1#y#ms70#n#-1*(ms2/ms8)# # #2#q#
~+3.21#1#y#ms84#n#ms14-(ms14/ms81)*ms81# # #2#q#
~+3.21#1#y#ms85#n#ms10-(ms14/ms81)*ms82# # #2#q#
~+3.21#1#y#ms71#n#-1*(ms4-(ms14/ms81)*ms70)# # #2#q#
~+3.21#1#y#ms65#n#(ms85/ms85)# # #2#q#
~+3.21#1#y#ms91#n#(ms71/ms85)# # #2#q#
~+3.21#1#y#ms62#n#ms82-(ms82/ms65)*ms65# # #2#q#
~+3.21#1#y#ms90#n#(ms70-(ms82/ms65)*ms91)# # #2#q#
~+3.21#1#y#ms107#n#(ms200+ms90)# # #2#q#
~+3.21#1#y#ms108#n#(ms201+ms91)# # #2#q#
~+3.21#1#y#ms50#n#abs(ms90)# # #2#q#
~+3.21#1#y#ms51#n#abs(ms91)# # #2#q#
~+#~r11+1#
~/Jumlah Iterasi h dan k (loop ke satu)
~+3.21#1#y#ms92#n#%r11%# # #2#q#
~r1=%ms50%
~r2=%ms51%
~r3=%ms92%
~/~?!r2<0.00001
~+3.21#1#y#ms201#n#ms108# # #2#q#
~/~?!r1<0.00001
~?!r3>0
~+3.21#1#y#ms200#n#ms107# # #2#q#~$G
~/Iterasi ke %ms92% *****

```