Dim i, rho, t3, sigma2, punti, dt, giorni, t, g, chi0

Dim c, dc, tot, m, D, ti, D0, rho0

Dim dg, dti, p, morti, dp, ds, s, dm, uno, k, kv

Dim c1, dc1, ti1, dti1, delta, dt1, conta, sw

Dim s1, ds1, m1, dm1, p1, dp1, g1, dg1, f, q, ti0, rt, t0

Dim t1, t2, dv, area, qv, qd

Dim b$

Dim n(350), spo(350), vac(500), casi(5000)

Open "/Users/spinella/Desktop/COVID+/Dati italia.txt" for input as #2

Open "/Users/spinella/Desktop/COVID+/Media italia.csv" for output as #3

Open "/Users/spinella/Desktop/COVID+/D italia.csv" for output as #5

Open "/Users/spinella/Desktop/Covid+/Italia vaccinazioni.txt" for input as #4

qv=0

g3: if eof(4) then g4

qv=qv+1

input #4,b$: vac(qv)=val(b$)

goto g3

g4: close #4

qd=0

w3: if eof(2) then w4

qd=qd+1

input #2, b$: n(qd)=val(b$)

goto w3

w4: close #2

area=302072.84\*1E6

rho=60360000/area: rho0=rho

D0=2.4E8

sigma2=3.1415

f=0.035

chi0=127/f

q=0.15

t1=7.2

t2=20

t3=14

t0=315

punti=60000

giorni=300

uno=punti/giorni

dt=giorni/punti

t=0: g=0: c=chi0/area: ti=f\*chi0/area: s=(1-f)\*chi0/area: p=chi0/area: morti=0

dg=0: dm=0

k=1

kv=1

for i=1 to qd

D=D0

delta=D/2: sw=0

v1: if sw>50 then v2:

c1=c: p1=p: ti1=ti: s1=s: g1=g: m1=morti: dg1=dg: dm1=dm

for k=1 to uno

dp1=D\*rho0\*sigma2\*(rho-c1)\*p1\*dt-dg1-dm1: p1=p1+dp1

dti1=f\*D\*rho0\*sigma2\*(rho-c1)\*p1\*dt-(1-q)\*ti1\*dt/t2-q\*ti1\*dt/t1: ti1=ti1+dti1

dm1=q\*ti1\*dt/t1

ds1=(1-f)\*D\*rho0\*sigma2\*(rho-c1)\*p1\*dt-s1\*dt/t3: s1=s1+ds1

dg1=s1\*dt/t3+(1-q)\*ti1\*dt/t2

dc1=D\*rho0\*sigma2\*(rho-c1)\*p1\*dt: c1=c1+dc1

next k

If 2\*abs(ti1\*area-n(i))/(ti1\*area+n(i))>0.001 then

if ti1\*area>n(i) then D=D-delta

if ti1\*area<n(i) then D=D+delta

delta=delta/2

sw=sw+1

goto v1

End if

v2: spo(i)=D/1E6: print i, ti1\*area, n(i), D\*rho0, 200\*abs(ti1\*area-n(i))/(ti1\*area+n(i))

print #5, i,",",: print #5, D/1E6,",",: write #5,""

for k=1 to uno

dp=D\*rho0\*sigma2\*(rho-c)\*p\*dt-dg-dm: p=p+dp

dti=f\*D\*rho0\*sigma2\*(rho-c)\*p\*dt-(1-q)\*ti\*dt/t2-q\*ti\*dt/t1: ti=ti+dti

dm=q\*ti\*dt/t1: morti=morti+dm

ds=(1-f)\*D\*rho0\*sigma2\*(rho-c)\*p\*dt-s\*dt/t3: s=s+ds

dg=s\*dt/t3+(1-q)\*ti\*dt/t2: g=g+dg

dc=D\*rho0\*sigma2\*(rho-c)\*p\*dt: c=c+dc

if t>=t0+kv-1 then

if kv>qv then dv=(vac(qv-6)+vac(qv-5)+vac(qv-4)+vac(qv-3)+vac(qv-2)+vac(qv-1)+vac(qv))/7

if kv<=qv then dv=vac(kv)

rho=rho-dv/area

kv=kv+1

if rho-c<=0 then v3

end if

t=t+dt

if t>80 then q=0.1

if t>265 then q=0.14

next k

if i>=5 and i<223 then

print #3, i-2,",",

print #3, (spo(i-4)+spo(i-3)+spo(i-2)+spo(i-1)+spo(i))/5,",",

write #3,""

end if

if i>=223 and i<275 then

print #3, i-1,",",

print #3, (spo(i-2)+spo(i-1)+spo(i))/3,",",

write #3,""

end if

if i>=275 then

print #3, i-2,",",

print #3, (spo(i-4)+spo(i-3)+spo(i-2)+spo(i-1)+spo(i))/5,",",

write #3,""

end if

next i

v3: close #3, #5