```
Function fu(t, x, dxdt)


G = 1 '100 '6.67428E-11

m1 = 1 '1 '1.9891E+30
m2 = 1 '1 '3.3022E+23
m3 = 1 '0.0001 '4.8685E+24




dxdt(1) = x(3)

dxdt(2) = x(4)

dxdt(3) = ((G * m2) / (((x(1) - x(5)) ^ 2 + (x(2) - x(6)) ^ 2) ^ (3 / 2))) * (x(5) - x(1)) + _

        ((G * m3) / (((x(1) - x(9)) ^ 2 + (x(2) - x(10)) ^ 2) ^ (3 / 2))) * (x(9) - x(1))


dxdt(4) = ((G * m2) / (((x(1) - x(5)) ^ 2 + (x(2) - x(6)) ^ 2) ^ (3 / 2))) * (x(6) - x(2)) + _

        ((G * m3) / (((x(1) - x(9)) ^ 2 + (x(2) - x(10)) ^ 2) ^ (3 / 2))) * (x(10) - x(2))



dxdt(5) = x(7)

dxdt(6) = x(8)

dxdt(7) = ((G * m1) / (((x(1) - x(5)) ^ 2 + (x(2) - x(6)) ^ 2) ^ (3 / 2))) * (x(1) - x(5)) + _

        ((G * m3) / (((x(5) - x(9)) ^ 2 + (x(6) - x(10)) ^ 2) ^ (3 / 2))) * (x(9) - x(5))


dxdt(8) = ((G * m1) / (((x(1) - x(5)) ^ 2 + (x(2) - x(6)) ^ 2) ^ (3 / 2))) * (x(2) - x(6)) + _

        ((G * m3) / (((x(5) - x(9)) ^ 2 + (x(6) - x(10)) ^ 2) ^ (3 / 2))) * (x(10) - x(6))
```

```
dxdt(9) = x(11)

dxdt(10) = x(12)

dxdt(11) = ((G * m1) / (((x(1) - x(9)) ^ 2 + (x(2) - x(10)) ^ 2) ^ (3 / 2))) * (x(1) - x(9)) + _

        ((G * m2) / (((x(5) - x(9)) ^ 2 + (x(6) - x(10)) ^ 2) ^ (3 / 2))) * (x(5) - x(9))


dxdt(12) = ((G * m1) / (((x(1) - x(9)) ^ 2 + (x(2) - x(10)) ^ 2) ^ (3 / 2))) * (x(2) - x(10)) + _

        ((G * m2) / (((x(5) - x(9)) ^ 2 + (x(6) - x(10)) ^ 2) ^ (3 / 2))) * (x(6) - x(10))


  fu = 0

End Function
```

```
Function testran(t, x As Range, dt)

n = x.Count

Dim dxdt(), k1(), k2(), k3(), k4(), k5(), k6(), k7(), k8(), k9(), k10(), k11(), k12(), k13(), xcurr(), soln() As Double

ReDim dxdt(1 To n), k1(1 To n), k2(1 To n), k3(1 To n), k4(1 To n), k5(1 To n), k6(1 To n), k7(1 To n), k8(1 To n), k9(1 To n), k10(1 To n), k11(1 To n), k12(1 To n), k13(1 To n), xcurr(1 To n), soln(1 To n)



'k1 = dt * f(t, y)

a = fu(t, x, dxdt)

For i = 1 To n

xcurr(i) = x(i)

k1(i) = dt * dxdt(i)

xcurr(i) = x(i) + k1(i) / 18

Next


'k2 = dt * f(t + dt / 18, y + k1 / 18)

a = fu(t + dt / 18, xcurr, dxdt)

For i = 1 To n

k2(i) = dt * dxdt(i)

xcurr(i) = x(i) + k1(i) / 48 + k2(i) / 16

Next


'k3 = dt * f(t + dt / 12, y + k1 / 48 + k2 / 16)

a = fu(t + dt / 12, xcurr, dxdt)

For i = 1 To n
```

```
k3(i) = dt * dxdt(i)

xcurr(i) = x(i) + k1(i) / 32 + k3(i) * 3 / 32

Next


'k4 = dt * f(t + dt / 8, y + k1 / 32 + k3 * 3 / 32)

a = fu(t + dt / 8, xcurr, dxdt)

For i = 1 To n

k4(i) = dt * dxdt(i)

xcurr(i) = x(i) + k1(i) * 5 / 16 - k3(i) * 75 / 64 + k4(i) * 75 / 64

Next


'k5 = dt * f(t + dt * 5 / 16, y + k1 * 5 / 16 - k3 * 75 / 64 + k4 * 75 / 64)

a = fu(t + dt * 5 / 16, xcurr, dxdt)

For i = 1 To n

k5(i) = dt * dxdt(i)

xcurr(i) = x(i) + k1(i) * 3 / 80 + k4(i) * 3 / 16 + k5(i) * 3 / 20

Next


'k6 = dt * f(t + dt * 3 / 8, y + k1 * 3 / 80 + k4 * 3 / 16 + k5 * 3 / 20)

a = fu(t + dt * 3 / 8, xcurr, dxdt)

For i = 1 To n

k6(i) = dt * dxdt(i)

xcurr(i) = x(i) + k1(i) * 29443841 / 614563906 + k4(i) * 77736538 / 692538347 - k5(i) * 28693883 /
1125000000 + k6(i) * 23124283 / 1800000000

Next
```

```
'k7 = dt * f(t + dt * 59 / 400, y + k1 * 29443841 / 614563906 + k4 * 77736538 / 692538347 - k5 *
28693883 / 1125000000 + k6 * 23124283 / 1800000000)

a = fu(t + dt * 59 / 400, xcurr, dxdt)

For i = 1 To n

k7(i) = dt * dxdt(i)

xcurr(i) = x(i) + k1(i) * 16016141 / 946692911 + k4(i) * 61564180 / 158732637 + k5(i) * 22789713 /
633445777 + k6(i) * 545815736 / 2771057229# - k7(i) * 180193667 / 1043307555

Next


'k8 = dt * f(t + dt * 93 / 200, y + k1 * 16016141 / 946692911 + k4 * 61564180 / 158732637 + k5 *
22789713 / 633445777 + k6 * 545815736 / 2771057229# - k7 * 180193667 / 1043307555)

a = fu(t + dt * 93 / 200, xcurr, dxdt)

For i = 1 To n

k8(i) = dt * dxdt(i)

xcurr(i) = x(i) + k1(i) * 39632708 / 573591083 - k4(i) * 433636366 / 683701615 - k5(i) * 421739975 /
2616292301# + k6(i) * 100302831 / 723423059 + k7(i) * 790204164 / 839813087 + k8(i) * 800635310 /
3783071287#

Next


'k9 = dt * f(t + dt * 5490023248# / 9719169821#, y + k1 * 39632708 / 573591083 - k4 * 433636366 /
683701615 - k5 * 421739975 / 2616292301# + k6 * 100302831 / 723423059 + k7 * 790204164 /
839813087 + k8 * 800635310 / 3783071287#)

a = fu(t + dt * 5490023248# / 9719169821#, xcurr, dxdt)

For i = 1 To n

k9(i) = dt * dxdt(i)

xcurr(i) = x(i) + k1(i) * 246121993 / 1340847787 - k4(i) * 37695042795# / 15268766246# - k5(i) *
309121744 / 1061227803 - k6(i) * 12992083 / 490766935 + k7(i) * 6005943493# / 2108947869 + k8(i) *
393006217 / 1396673457 + k9(i) * 123872331 / 1001029789

Next
```

```
'k10 = dt * f(t + dt * 13 / 20, y + k1 * 246121993 / 1340847787 - k4 * 37695042795# / 15268766246# - k5 * 309121744 / 1061227803 - k6 * 12992083 / 490766935 + k7 * 6005943493# / 2108947869 + k8 * 393006217 / 1396673457 + k9 * 123872331 / 1001029789)

a = fu(t + dt * 13 / 20, xcurr, dxdt)

For i = 1 To n

k10(i) = dt * dxdt(i)

xcurr(i) = x(i) - k1(i) * 1028468189 / 846180014 + k4(i) * 8478235783# / 508512852 + k5(i) * 1311729495 / 1432422823 - k6(i) * 10304129995# / 1701304382 - k7(i) * 48777925059# / 3047939560# + k8(i) * 15336726248# / 1032824649 - k9(i) * 45442868181# / 3398467696# + k10(i) * 3065993473# / 597172653

Next


'k11 = dt * f(t + dt * 1201146811 / 1299019798, y - k1 * 1028468189 / 846180014 + k4 * 8478235783# / 508512852 + k5 * 1311729495 / 1432422823 - k6 * 10304129995# / 1701304382 - k7 * 48777925059# / 3047939560# + k8 * 15336726248# / 1032824649 - k9 * 45442868181# / 3398467696# + k10 * 3065993473# / 597172653)

a = fu(t + dt * 1201146811 / 1299019798, xcurr, dxdt)

For i = 1 To n

k11(i) = dt * dxdt(i)

xcurr(i) = x(i) + k1(i) * 185892177 / 718116043 - k4(i) * 3185094517# / 667107341 - k5(i) * 477755414 / 1098053517 - k6(i) * 703635378 / 230739211 + k7(i) * 5731566787# / 1027545527 + k8(i) * 5232866602# / 850066563 - k9(i) * 4093664535# / 808688257 + k10(i) * 3962137247# / 1805957418 + k11(i) * 65686358 / 487910083

Next


'k12 = dt * f(t + dt, y + k1 * 185892177 / 718116043 - k4 * 3185094517# / 667107341 - k5 * 477755414 / 1098053517 - k6 * 703635378 / 230739211 + k7 * 5731566787# / 1027545527 + k8 * 5232866602# / 850066563 - k9 * 4093664535# / 808688257 + k10 * 3962137247# / 1805957418 + k11 * 65686358 / 487910083)

a = fu(t + dt, xcurr, dxdt)
```

```
For i = 1 To n

k12(i) = dt * dxdt(i)

xcurr(i) = x(i) + k1(i) * 403863854 / 491063109 - k4(i) * 5068492393# / 434740067 - k5(i) * 411421997 /
543043805 + k6(i) * 652783627 / 914296604 + k7(i) * 11173962825# / 925320556 - k8(i) *
13158990841# / 6184727034# + k9(i) * 3936647629# / 1978049680 - k10(i) * 160528059 / 685178525 +
k11(i) * 248638103 / 1413531060

Next


'k13 = dt * f(t + dt, y + k1 * 403863854 / 491063109 - k4 * 5068492393# / 434740067 - k5 * 411421997 /
543043805 + k6 * 652783627 / 914296604 + k7 * 11173962825# / 925320556 - k8 * 13158990841# /
6184727034# + k9 * 3936647629# / 1978049680 - k10 * 160528059 / 685178525 + k11 * 248638103 /
1413531060)

a = fu(t + dt, xcurr, dxdt)

For i = 1 To n

k13(i) = dt * dxdt(i)

Next


For i = 1 To n

soln(i) = x(i) + (k1(i) * 14005451 / 335480064 - k6(i) * 59238493 / 1068277825 + k7(i) * 181606767 /
758867731 + k8(i) * 561292985 / 797845732 - k9(i) * 1041891430 / 1371343529 + k10(i) * 760417239 /
1151165299 + k11(i) * 118820643 / 751138087 - k12(i) * 528747749 / 2220607170# + k13(i) / 4)

Next



testran = soln



End Function
```