```
      program prog101
      implicit real*8(a-h,o-z)
      parameter (nmax = 1000)
      real  xx(nmax), yy(nmax)
c
      ti = 0.0d0
      dt = 0.01d0
      xi = 0.0d0
      yi = 0.0d0
      theta = atan(1.0d0)
      vxi = 20.0d0 * sin(theta)
      vyi = 20.0d0 * cos(theta)
      gan = 1.0d0
      a = 0.1d0
      ga = gan * a**2
      nstep = 1
c
      t = ti
      x = xi
      y = yi
      vx = vxi
      vy = vyi
c
      xx(1) = 0.0D0
      yy(1) = 0.0D0
c
 100  continue
c
      call onestep(x,y,vx,vy,dt,ga)
      t = t + dt
      nstep = nstep + 1
      xx(nstep) = x
      yy(nstep) = y
      if( y.ge.0.0d0 ) goto 100
c
c dcl による作画
c
      write(*,*) "workstation ID (i) ?"
      call sgpwsn
      read(*,*) iws
      call gropn(iws)
      call grfrm
      call usspnt(nstep-1, xx(1:nstep-1), yy(1:nstep-1
      call uspfit
      call grstrf
      call ussttl('x','','y','')
      call usdaxs
      call sgspli(23)
      call sgplu(nstep-1, xx(1:nstep-1), yy(1:nstep-1)
      call uxsttl('T', "prog101.f", 0.0)
      call grcls

      stop
 800  format(3(1x,f15.7))
      end

c----------------------------------------------
      subroutine onestep(x,y,vx,vy,dt,ga)
c----------------------------------------------
      implicit real*8(a-h,o-z)
c
c x1,y1 での微係数 vx1,vy1 を求める
      call force(vx,vy,fx,fy,ga)
c      x1 = x + vx * dt /2
c      y1 = y + vy * dt /2
      vx1 = vx + fx * dt /2
      vy1 = vy + fy * dt /2
c
c x1,y1 での微係数を使い x,y,vx,vy を進める
      call force(vx1,vy1,fx1,fy1,ga)
      x = x + vx1*dt
      y = y + vy1*dt
      vx = vx + fx1*dt
      vy = vy + fy1*dt
c
      return
      end
c----------------------------------------------
      subroutine force(vx,vy,fx,fy,ga)
c----------------------------------------------
      implicit real*8(a-h,o-z)
      m = 1.0d0
```

```
g = 9.8d0
v =sqrt(vx**2 + vy**2)
fx = - ga * v * vx /m
fy = - ga * v * vy /m - g
return
end
```