```fortran
! compile: gfortran -o planets planets.f90 standish_module.o
Program Planets
     Use standish
     Implicit None
     Real (8) :: Julian, PV (6), QV (6), P (9, 6)
     Integer :: I, J, ITBL
!
     Write (*,*) "Approximate Positions of the Major Planets"
     Write (*,*) "Enter Julian (TT), eg 2451545.0"
     Read (*,*) Julian
     Write (*,*)
!
   ! Compute Positions
!
     Do J = 1, 9
        Call Helio (J, Julian, PV, ITBL)
        P (J, :) = PV
     End Do

   ! Report Results
!
     Call Title
     Write (*, '(A,F12.3)') "Heliocentric Ecliptic Coordinates (J2000)&
    & Julian (TT)", Julian
     Write (*,*) "Planet         X         Y         Z        VX        VY        VZ  "
     Write (*,*) "                     Position (AU)          Velocity (KPS)"
     Do J = 1, 9
     Write (*, '(A10, 3F9.3,3F9.4)') eph(1)%name(J), P (J, 1:3), s_KPS * P (J, 4:6)
     End Do
!
     Write (*,*)
     Write (*, '(A,F12.3)') "Heliocentric Equatorial Coordinates (ICRF&
    &) Julian (TT)", Julian
     Write (*,*) "Planet         X         Y         Z        VX        VY        VZ  "
     Write (*,*) "                     Position (AU)          Velocity (KPS)"
     Do J = 1, 9
        Call ec2eq (P(J, :), QV)
        Write (*, '(A10, 3F9.3,3F9.4)') eph(1)%name(J), QV (1:3),  s_KPS * QV (4:6)
     End Do
     Write (*,*)
! ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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 ! LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING
 ! IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF
 ! THE POSSIBILITY OF SUCH DAMAGE.
! ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

End Program
```

```
 70    ! EAXMPLE OUTPUT
 71    !
 72     ! Approximate Positions of the Major Planets
 73     ! Method and Data from E. M. Standish, JPL/CalTech
 74     ! Keplerian Elements Valid 3000 BC - 3000 AD.
 75     ! (http://ssd.jpl.nasa.gov/txt/aprx_pos_planets.pdf)
 76     ! Planetary Ephemeris Module V1 2018
 77
 78    ! Heliocentric Ecliptic Coordinates (J2000) Julian (TT) 2451545.000
 79     ! Planet        X         Y         Z        VX         VY         VZ
 80                    ! Position (AU)              Velocity (KPS)
 81      ! Mercury    -0.130    -0.447    -0.025   36.9955  -11.1645   -4.3077
 82      ! Venus      -0.718    -0.033     0.041    1.3832  -35.1403   -0.5601
 83      ! Earth      -0.177     0.967    -0.000  -29.7870   -5.4789    0.0000
 84      ! Mars        1.391    -0.013    -0.034    1.1646   26.2975    0.5223
 85      ! Jupiter     3.998     2.946    -0.102   -7.9127   11.1382    0.1311
 86      ! Saturn      6.415     6.546    -0.369   -7.4126    6.7409    0.1773
 87      ! Uranus     14.425   -13.738    -0.238    4.6433    4.6120   -0.0431
 88      ! Neptune    16.805   -24.993     0.127    4.4730    3.0619   -0.1661
 89      ! Pluto      -9.883   -27.964     5.851    5.2496   -2.6734   -1.2323
 90
 91    ! Heliocentric Equatorial Coordinates (ICRF) Julian (TT) 2451545.000
 92     ! Planet        X         Y         Z        VX         VY         VZ
 93                    ! Position (AU)              Velocity (KPS)
 94      ! Mercury    -0.130    -0.401    -0.200   36.9955   -8.5297   -8.3932
 95      ! Venus      -0.718    -0.046     0.025    1.3832  -32.0178  -14.4919
 96      ! Earth      -0.177     0.887     0.385  -29.7870   -5.0268   -2.1794
 97      ! Mars        1.391     0.001    -0.037    1.1646   23.9198   10.9397
 98      ! Jupiter     3.998     2.743     1.078   -7.9127   10.1669    4.5508
 99      ! Saturn      6.415     6.152     2.265   -7.4126    6.1141    2.8440
100      ! Uranus     14.425   -12.509    -5.683    4.6433    4.2485    1.7950
101      ! Neptune    16.805   -22.981    -9.825    4.4730    2.8753    1.0655
102      ! Pluto      -9.883   -27.984    -5.755    5.2496   -1.9626   -2.1940
103
104
105    ! DE430 RESULTS
106     ! DE430 Ephemeris (taken as authoritative)
107
108    ! Heliocentric Ecliptic Coordinates (J2000) Julian (TT) 2451545.000
109     ! Planet        X         Y         Z        VX         VY         VZ
110      ! Mercury    -0.130    -0.447    -0.025   36.9950  -11.1644   -4.3076
111      ! Venus      -0.718    -0.033     0.041    1.3819  -35.1403   -0.5600
112      ! Earth      -0.177     0.967    -0.000  -29.7943   -5.4693    0.0002
113      ! Mars        1.391    -0.013    -0.034    1.1627   26.2961    0.5223
114      ! Jupiter     4.001     2.939    -0.102   -7.9098   11.1561    0.1309
115      ! Saturn      6.406     6.570    -0.369   -7.4320    6.7359    0.1783
116      ! Uranus     14.432   -13.734    -0.238    4.6370    4.6277   -0.0429
117      ! Neptune    16.812   -24.992     0.127    4.4659    3.0766   -0.1661
118      ! Pluto      -9.875   -27.959     5.850    5.2442   -2.6626   -1.2331
119
120    ! Heliocentric Equatorial Coordinates (ICRF) Julian (TT) 2451545.000
121     ! Planet        X         Y         Z        VX         VY         VZ
122      ! Mercury    -0.130    -0.401    -0.200   36.9950   -8.5297   -8.3931
123      ! Venus      -0.718    -0.046     0.025    1.3819  -32.0178  -14.4918
124      ! Earth      -0.177     0.887     0.385  -29.7943   -5.0181   -2.1754
125      ! Mars        1.391     0.001    -0.037    1.1627   23.9184   10.9392
126      ! Jupiter     4.001     2.737     1.076   -7.9098   10.1835    4.5577
127      ! Saturn      6.406     6.175     2.275   -7.4320    6.1092    2.8429
128      ! Uranus     14.432   -12.506    -5.682    4.6370    4.2629    1.8014
129      ! Neptune    16.812   -22.980    -9.824    4.4659    2.8888    1.0715
130      ! Pluto      -9.875   -27.979    -5.754    5.2442   -1.9524   -2.1905
131
```