

CreateKeplerianOrbit 4.5.1

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```
public class SimpleKeplerianOrbit {

    public static void main(String[] args) throws PatriusException,
    IOException, URISyntaxException {

        // Patrius Dataset initialization (needed for example to get the UTC
time)
        PatriusDataset.addResourcesFromPatriusDataset() ;

        // Recovery of the UTC time scale using a "factory" (not to duplicate
such unique object)
        final TimeScale TUC = TimeScalesFactory.getUTC();

        // Date of the orbit given in UTC time scale)
        final AbsoluteDate date = new AbsoluteDate("2010-01-01T12:00:00.000",
TUC);

        // Getting the frame with wich will defined the orbit parameters
// As for time scale, we will use also a "factory".
        final Frame GCRF = FramesFactory.getGCRF();

        // Creation of a keplerian orbit
        final double sma = 7200.e+3;
        final double exc = 0.01;
        final double inc = FastMath.toRadians(98.);
        final double pa = FastMath.toRadians(0.);
        final double raan = FastMath.toRadians(0.);
        final double anm = FastMath.toRadians(0.);
        final double MU = Constants.WGS84_EARTH_MU;
        final KeplerianOrbit iniOrbit = new KeplerianOrbit(sma, exc, inc, pa,
raan, anm, PositionAngle.MEAN, GCRF, date, MU);

        // Printing the Keplerian period
        System.out.println();
        System.out.println("Tper = "+iniOrbit.getKeplerianPeriod()+" s");

        // Propagating 100 s with a keplerian motion
        final double dt = 100.;
        final Orbit finalOrbit = iniOrbit.shiftedBy(dt);

        // Printing new date and latitude argument
        System.out.println();
        System.out.println("Initial true latitude argument =
"+FastMath.toDegrees(iniOrbit.getLv())+" deg");
```

```
        System.out.println("New date = "+finalOrbit.getDate().toString(TUC)+"
deg");
        System.out.println("True latitude argument =
"+FastMath.toDegrees(finalOrbit.getLv())+" deg");

    }

}
```

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