HW 15-7 Soln

You might be able to see that it is ==udd==. Let's solve.

$n^0 = Xu + Yd + Zs$, where X, Y, and Z are the number of each type of quark.

$X(^2/_3) + Y(^{-1}/_3) + Z(^{-1}/_3) = 0$ Charge

$X(^1/_3) + Y(^1/_3) + Z(^1/_3) = +1$ Baryon Number

$X(0) + Y(0) + Z(-1) = 0$ Strangeness

The third equation clearly indicates that $Z = 0$, *i.e.*, there are no strange quarks.

The other two equations then become

$X(^2/_3) + Y(^{-1}/_3) = 0$ Charge

$X(^1/_3) + Y(^1/_3) = +1$ Baryon Number

Adding these equations results in $X = 1$, so there is one up quarks.

Then, the last equation says that

$Y(^1/_3) = +^2/_3$

and tells that $Y = +2$, there are two down quarks, so the quark composition is udd.