Let $m_1,...,m_n$ be all maximal ideals, that contain I .

As in the solution to Ex. 2.11B, there exists an element $b\in I\setminus\bigcup_{i=1}^{n} m_i I$. The ideal $I^{-1}b$ cannot be contained in any m_i (since $I^{-1}b\subseteq m_i$ would imply that $b\in m_i I$, by the invertibility of I). Therefore, $I+I^{-1}b$ is contained in no maximal ideals of R, and so $I+I^{-1}b=R$. Multiplying this equation by I , we get $I^2+Rb=I$. Now the ideal I/Rb in the ring R/ Rb is f.g. and idempotent. This implies that I/ Rb is generated by a suitable (idempotent) element $a+Rb$ in R/ Rb. From this, we have clearly I = Ra + Rb.