Consider the circuit below. Assume $I_\text{BQ1} = 930\mu A$ is off, $I_\text{BQ2} = 930\mu A$ is on. If $I_\text{BQ2} = 930\mu A$, what is the LED current and is Q1 on or off? Assume $V_{\text{LED}}(\text{on}) = 2\,\text{V}$, $V_{\text{CE}}(\text{sat}) = 0.2\,\text{V}$

![Circuit Diagram]

If $I_\text{BQ2} = 930\mu A$, then $I_\text{CQ2} = 930\mu A \times 100 = 93\,\text{mA}$. But even if Q2 was shorted C to E, the current would only be $\frac{10 - 0.2 - 2.0}{100} = 78\,\text{mA}$, so Q2 is saturated and the LED current is 78mA.

If 930μA is flowing into Q2 base, then $(930 \times 10^{-6}) 10000$ volts is dropped across the 10k resistor in the collector path of Q1 which is 9.3 volts. Since Q2 is on $V_{\text{BEQ2}} = 0.7$, thus no current can be flowing through Q1, Q1 is off.