1. Consider an array $A[1..n]$ of $n$ numbers that are sorted in increasing order. Design an algorithm to decide whether $A$ contains two numbers $a$ and $b$ with $a + b = 2017$, which asymptotically has worst-case optimal runtime. Explain your algorithm in detail, show its correctness, and analyze its runtime and memory requirements. Further, give reasons why the runtime of your algorithm is asymptotically worst-case optimal.