

Polynomial-time algorithm means this algorithm runs in polynomial-time in the size of the input. For this problem, the size of input is  $n$ , the for loop would run for  $\lfloor \sqrt{n} \rfloor - 1$  times. However, the if statement within the for loop tests if  $i$  divides  $n$ , and this division doesn't run in polynomial time but in exponential time. Hence, IsPrime is not a polynomial-time algorithm.