Teamwork 2

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Problem 2. For any even integer n, it is always possible to find a pair of integers m and k such that $n = m \times 2^k$, where m is the smallest integer.

1. Write an algorithm that finds a factorization of any even integer n as stated above. For instance, we have the following two factorizations: $48 = 3 \times 2^4$ instead of $48 = 12 \times 2^2$ and $52 = 13 \times 2^2$ instead of $52 = 26 \times 2$.

```
procedure SmallestOdd(n: integer; var m, k: integer);
    begin
        m := n;
        k := 0;
        while((m mod 2) = 0) do
            begin
                k := k + 1;
                m := m / 2;
            end;
    end;
```

2. Analyze the time of your algorithm.

The time complexity of the algorithm is $O(\log_2 n)$ since each iteration halves the input.