20.7
MST: An epilogue

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Prim's algorithm using Fibonacci heaps: $O(n \log n + m)$.
If m is $O(n)$ then running time is $\Omega(n \log n)$.

Question

Is there a linear time ($O(m + n)$ time) algorithm for MST?

1. $O(m \log^* m)$ time **[Fredman and Tarjan 1987]**
2. $O(m + n)$ time using bit operations in RAM model **[Fredman, Willard 1994]**
3. $O(m + n)$ expected time (randomized algorithm) **[Karger, Klein, Tarjan 1995]**
4. $O((n + m)\alpha(m, n))$ time **[Chazelle 2000]**
5. Still open: Is there an $O(n + m)$ time deterministic algorithm in the comparison model?

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