Foundations of Algorithms
Homework 4

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1. (**project**) Write a function `max2` to compute the maximum of two numbers. It should use *no* comparisons. Assume that other mathematical operations such as $\sqrt{x}$, x^2, $|x|$, etc. do not use any comparisons.

2. (**project**) Implement the functional select algorithm called `fSelect`. It should take two parameters: a list and an index. It should return the specified element of the list.

3. (**project**) Implement an imperative select algorithm called `iSelect`. It should take two parameters: an array and an index. It should return the specified element of the array. The implementation should avoid allocating memory by calling `iSelectHelper` that takes an array and an index as well as low and high slice parameters that indicate the region under consideration. Further, the in-place partition algorithm from quick sort should be used.

4. (a) CLRS 22.1-1
   (b) CLRS 22.1-8

5. (a) CLRS 22.2-2
   (b) Show that using a single bit to store each vertex color suffices by arguing that the BFS procedure would produce the same result if line 18 were removed.
   (c) CLRS 22.2-5

6. CLRS 22.3-7