| COS 226 Fall 2012 Class Exercise 14 | 6 questions; 4 pgs. | 2012-11-01 |
| :--- | :--- | :--- |
| © 2012 sudarshan s. Chawathe |  |  |

(c) 2012 Sudarshan S. Chawathe

Today's topic: Skew heaps Textbook $\S \S 23.1$
Next class: Pairing heaps and applications. Textbook $\S \S$ 23.2.

1. List the members of your group below. Underline your name.
2. Use merge-based insertions and simplistic merging to insert the keys $1,2, \ldots, 10$ into an initially empty heap-ordered tree. Then perform three merge-based deleteMin operations. Depict the state of the tree after each operation.
3. Repeat Question 2 using skew merging instead of simplistic merging.
4. Given a positive integer $n$, describe how to generate a sequence of $n+1$ operations on an initially empty skew heap such that the last operation requires $\Omega(n)$ time, or explain why no such operations are possible. Provide illustrative worked examples.
5. Depict all distinct heap-ordered binary trees over the keys $1,2,3,4$. You may abbreviate.
6. Provide a non-recursive variant of the recursive skew-merging algorithm of Section 23.1.3. Justify its correctness and quantify its time and space complexities, highlighting any differences from the recursive counterparts.
