

## **COP 4520 Spring 2018**

### **Algorithm Assignments**

Please find the list of algorithm assignments.

Next to every team name, you will find a link to the primary research paper that you are supposed to study and re-implement its algorithms.

Team 1:

“Split-Ordered Lists – Lock-free Extensible Hash Tables”

URL: [http://people.csail.mit.edu/shanir/publications/Split-Ordered\\_Lists.pdf](http://people.csail.mit.edu/shanir/publications/Split-Ordered_Lists.pdf)

Team 2:

“The SprayList: A Scalable Relaxed Priority Queue”

URL: [http://research.microsoft.com/pubs/209108/SprayList\\_full.pdf](http://research.microsoft.com/pubs/209108/SprayList_full.pdf)

Team 3:

“Relativistic red-black trees”

URL: <http://web.cecs.pdx.edu/~walpole/papers/ccpe2013.pdf>

Team 4:

“A Scalable, Correct Time-Stamped Stack”

[https://www-users.cs.york.ac.uk/~miked/publications/scalable\\_correct\\_TS\\_stack.pdf](https://www-users.cs.york.ac.uk/~miked/publications/scalable_correct_TS_stack.pdf)

Team 5:

“Lock-free linked lists and skip lists”

URL: [http://people.scs.carleton.ca/~edwardduong/PDF\\_files\\_of\\_relevant\\_papers/2004%20-%20Lock-free%20Linked%20List%20and%20Skip%20Lists.pdf](http://people.scs.carleton.ca/~edwardduong/PDF_files_of_relevant_papers/2004%20-%20Lock-free%20Linked%20List%20and%20Skip%20Lists.pdf)

Note: implement lock-free linked list

Team 6:

“Lock-Free Dynamically Resizable Arrays”

URL: [http://link.springer.com/chapter/10.1007%2F11945529\\_11](http://link.springer.com/chapter/10.1007%2F11945529_11)

Team 7:

“Efficient Lock-free Binary Search Trees”

<http://arxiv.org/pdf/1404.3272v3.pdf>

Team 8:

“A lock-free, array-based priority queue”

URL: <http://dl.acm.org/citation.cfm?id=2145876>

Team 9:

“Fast and Scalable, Lock-free k-FIFO Queues”

URL: [http://link.springer.com/chapter/10.1007%2F978-3-642-39958-9\\_18](http://link.springer.com/chapter/10.1007%2F978-3-642-39958-9_18)

Team 10:

“An Efficient Lock-Free Logarithmic Search Data Structure Based on Multi-dimensional List”

URL: <http://ieeexplore.ieee.org/abstract/document/7536527/>

Team 11:

“A scalable lock-free stack algorithm”

URL: <http://www.cs.bgu.ac.il/~hendlerd/papers/scalable-stack.pdf>

Team 12:

“A Fast Lock-Free Internal Binary Search Tree”

URL: <http://dl.acm.org/citation.cfm?id=2684472>

Team 13:

“Non-Blocking Doubly-Linked Lists with Good Amortized Complexity”

<http://arxiv.org/abs/1408.1935>

Team 14:

“Wait-free linked-lists”

URL: <http://dl.acm.org/citation.cfm?doid=2145816.2145869>

Team 15:

“The Adaptive Priority Queue with Elimination and Combining”

URL: [http://link.springer.com/chapter/10.1007/978-3-662-45174-8\\_28](http://link.springer.com/chapter/10.1007/978-3-662-45174-8_28)

Team 16:

“Concurrent Wait-Free Red Black Trees”

URL: [http://link.springer.com/chapter/10.1007/978-3-319-03089-0\\_4](http://link.springer.com/chapter/10.1007/978-3-319-03089-0_4)

Team 17:

“Lock-Free Resizeable Concurrent Tries”

URL: [http://link.springer.com/chapter/10.1007/978-3-642-36036-7\\_11](http://link.springer.com/chapter/10.1007/978-3-642-36036-7_11)

Team 18:

Near Memory Computing Project

Team 19:

“Non-blocking Hashtables with Open Addressing”

URL: [http://link.springer.com/chapter/10.1007%2F11561927\\_10](http://link.springer.com/chapter/10.1007%2F11561927_10)

Team 20:

“The SkipTrie: Low-Depth Concurrent Search without Rebalancing”

URL: <http://groups.csail.mit.edu/tds/papers/Oshman/oshman-shavit-podc13.pdf>

Team 21:

“Dynamic-sized nonblocking hash tables”

URL: <http://dl.acm.org/citation.cfm?id=2611495>

Note: implement lock-free version

Team 22:

“The Baskets Queue”

URL: <http://people.csail.mit.edu/shanir/publications/Baskets%20Queue.pdf>

Team 23:

“A lock-free B+tree”

URL: <http://dl.acm.org/citation.cfm?id=2312016>