Data Structures 9/14/2016

0145-343-001

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ANNOUNCEMENTS

Assignment #1 moved to Monday, 9/19:

Quiz – 9/23/2016

* Write basic class in C++
* Trace program using stack/ use stack implementation
* Infix/prefix/post fix
* Tracing OR writing recursive program

NOTES

Topic: Recursion (cont’d)

PowerPoint: <http://home.adelphi.edu/~siegfried/cs343/343l3.pdf>

* Binary Search – can be written as we normally do BUT it can ALSO be written recursively

Ex: Call binarySearch(index/2, index) if you did not find element

* Recursion does not have to be direct. Function **f** can call **g**, which can call **f**. This is known as chain recursion (or recursive chains).
* Algebraic expressions can be defined recursively, in terms of expressions, factors, and identifiers
  + E -> T + T | T
  + T -> F \* F | F
  + F -> id | (E)
* Fun game testing recursion: Towers of Hanoi (<http://www.coolmath-games.com/0-tower-of-hanoi>)
* Demo of Towers of Hanoi: for 100 blocks, we see the program takes A LOT OF TIME. This is because the algorithm to solve for the program uses DOUBLE RECURSION.