CSC 220 Data Structures Intro

• *Structuring* or organizing collections of data
• Apply *algorithms* to data structures
• Choice of data structure guides choice of algorithm
• Learn to approach problems by asking:

  “How can I structure my data?”
  “What algorithm can I use on this data structure?”
Pre-reqs

• Official: either CSC 123 & CSC 125 or CSC 140 & CSC 256
• Unofficial: 2 semesters of college level programming
• Familiarity with:
  • variables
  • loops
  • control flow
  • functions
  • arrays
  • OOP
  • pointers/references
Course Goals

• Preparation for transferring to a BS program
• This class goes hand-in-hand with MAT200
• Theoretical approach mixed with practical applications

• Writing vs. English degree ≈ Programming vs. CS degree
Course Goals, con’td

• Explain/perform *algorithm analysis*

• Analyze and choose appropriately:
  • linear data structures
    • dynamic arrays, linked lists, stacks, queues, deques
  • priority queues and heaps
  • n-way trees
  • binary search trees
    • self-balancing binary search trees
  • maps, hash tables
  • graphs
  • sorting algorithms
Programming

• Python 3: used by textbook, web notes, example code, etc.
  • Don’t use Python 2.x!

• First part of class will cover the basics

• Use whatever editor you want
  • Will mostly only hand in .py source code files

• Must be able to download example code from Linux server, but don’t necessarily have to use Linux
Administrivia

• Syllabus
  • online web notes version
  • hard copy
  • extra stuff Parkland puts in Cobra

• Scheduling

• Readings

• Linux accounts

• A with Honors