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ECE 150 *Fundamentals of Programming*

Problems with pointers

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Outline

- In this lesson, we will:
  - Introduce some of the problems with pointers
  - Discuss the three next sub-topics

Problems with pointers

- The operating system allocates memory to executing programs
- Dynamically allocated memory relies on storing addresses
  - It is very possible to either
    - Have a pointer that for some reason has an invalid address
    - Loose track of addresses that have been allocated due to local variables storing those addresses going out of scope

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Problems with pointers

- We will look at three different situations:
  1. Pointers that are not initialized properly
     - *wild pointers*
  2. Pointers that store the address of memory no longer allocated
     - *dangling pointers*
  3. Losing the address of memory allocated to your program
     - *memory leaks*

- These issues will, no doubt, continue to be a source of frustration in this course, in future courses, and throughout your professional career

Summary

- Following this lesson, you now
  - Understand there are issues with pointers
    - We will look at these issues in each of the next three lessons

References

[1]   https://en.wikipedia.org/wiki/Pointer_(computer_programming)
[2]   https://en.wikipedia.org/wiki/Dangling_pointer
[3]   https://en.wikipedia.org/wiki/Memory_leak

Colophon

These slides were prepared using the Georgia typeface. Mathematical equations use Times New Roman, and source code is presented using Consolas.

The photographs of lilacs in bloom appearing on the title slide and accenting the top of each other slide were taken at the Royal Botanical Gardens on May 27, 2018 by Douglas Wilhelm Harder. Please see

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