

**Concepts of Programming Languages, CSCI 305, Fall 2021**  
**Pointers and References, Oct. 13**

Section 8.5 Pointers and Recursive Types, pages 377-389

Recursive type – type whose objects may contain one or more references to other objects of that type.

Recursive types are needed to create lists and trees

Recursive types can be implemented via pointers or references

Programming languages use reference or value model of variables:

- Value – variables are seen as named containers
- Reference – variables are a named reference to a variable.

