

CS 420 Advanced Programming Languages
Fall Semester, 2022
Doc 14 Review
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Stack & Heap

Activation records

functions

parameters

static link

Dynamic Link

Recursion

Tail recursion optimization

Global variables

Python & stack

Block variables

Managing heap

Garbage collection

Reference counting

Manual

Zombies

Dangling pointers

Memory leaks

Rust and memory management

Rust

Types & Type Safety

Option, Result

Explain features of Rust using stack & heap

Copy vs Non-copy

Moves, Ownership, Borrowing

str vs String

&, *

Shared vs Mutable Reference

Slice

Lifetime

Struct

impl, access levels

self

Traits

Generics

Closure

map & filter

Recursion

Box & Option

Macro vs function

Rc, Arc

Semaphores, Mutex

Poisoned Mutex

Clojure

Functional Programming Attributes

Pure function

First Class Function

Higher order functions

Immutability

Lazy Evaluation

Defining a function

Operators, assignment

map

filter reduce