Week 9 Discussion

CS 131 Section 1B
27 May 2022
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Announcements

- Project released, **due 5/30**
- HW6 released, due 6/3
- Homeworks should be submitted on BruinLearn, under Assignments
- Before submitting
  - Make sure your code compiles on SEASnet server
  - Make sure your function signatures are correct
  - Follow all instructions and specifications
  - Do not submit files in a .zip unless told to do so
- Help and starter code from past TAs
  - https://github.com/CS131-TA-team

Golang

Golang

- Typically shortened to Go
- Developed at Google to be a easy-to-learn and safe language
  - Similar to C++, but memory safe and simpler
  - Lacks classes, prefers composition over inheritance
- Statically typed, compiled, imperative language
- Has a strong tooling ecosystem (compiler, unit tests, formatter, documentation generator)
  - Produced binaries are statically linked, meaning they can run anywhere
- Well adapted for writing servers
  - Supports networking and multiprocessing
  - Built in concurrency primitives

Hello World

```
package main
import "fmt"
func main() {
    fmt.Println("Hello, World")
}
```

Interfaces

```
type geometry interface {
     area() float64
     perim() float64
}

type rect struct {
     width, height float64
}
type circle struct {
     radius float64
}

func (r rect) area() float64 {
     return r.width * r.height
}
func (r rect) perim() float64 {
     return 2*r.width + 2*r.height
}
```

```
func (c circle) area() float64 {
     return math.Pi * c.radius * c.radius
}
func (c circle) perim() float64 {
     return 2 * math.Pi * c.radius
}

func measure(g geometry) {
     fmt.Println(g)
     fmt.Println(g.area())
     fmt.Println(g.perim())
}

func main() {
     r := rect{width: 3, height: 4}
     c := circle{radius: 5}

     measure(r)
     measure(c)
}
```

Generics

- Introduced in Go version 1.18
- Intended to reduce code duplication
  - Allow for functions that operate on a variety of types

```
import "golang.org/x/exp/constraints"

func GMin[T constraints.Ordered](x, y T) T {
    if x < y { return x }
    return y
}

x := GMin[int](2, 3)

fmin := GMin[float64]
m := fmin(2.71, 3.14)
```

Midterm Review

Thank You