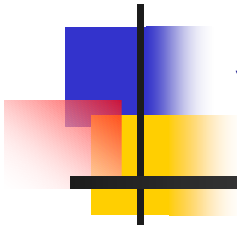


Booleans, Conditionals, and Symbolic Values





Last Lecture

- Testing: Lots of ways to do it!
 - Static analysis (including type checking) maybe unintuitive, but very powerful
- Contracts: For this class, if the user “defaults”, they’re on their own...
- Function abstraction
- Name abstraction



Today's Goals

- Booleans (named after Bool)
- Symbolic values
 - Back-quoted literals/values
 - Can be passed around, and
 - Can be tested for equality
 - Strings (quoted values), Images, Movies, etc...



Booleans

- Booleans values $\in \{\text{true}, \text{false}\}$
- Booleans are NOT equal to any other values (like 0, 1, "true", etc)
- Examples
 - $(= (+ 1 1) 2) \rightarrow \underline{\text{true}}$
 - $(\text{not false}) \rightarrow \underline{\text{true}}$
 - $(\text{or true (not true)}) \rightarrow \underline{\text{true}}$
 - $(\text{and true (or true (not true))}) \rightarrow \underline{\text{true}}$



Conditionals

- The *cond* statement let us do more:

```
(define (day n)
```

```
  (cond
```

```
    [(= n 1) (...lots of work 7/(n-2) ..."Monday"]
```

```
    [(= n 2) (...lots of work ..."Tuesday"] ...
```

```
    [(= n 7) "Sunday"]
```

```
    [else   "What?"])))
```

- (day 2) → "Tuesday", (day 14) → "What?"
- Careful about what is evaluated!



Symbolic Information

- “It’s all zeros and ones”
 - Convenient for the machine, but not me!
- We’ve seen: numbers, booleans, strings
- There are a few others. For example:
 - Symbols: ‘rabbit, ‘Ringo, ‘submarine
 - (symbol=? ‘rabbit ‘bunny) → false
 - Strings: “Tommy Lee”, “MIB II”
 - (= ‘rabbit “rabbit”) → error
- Mike’s point: (define rabbit ‘rabbit)