

**1. “A given location can only accommodate one lesson at any given time slot on a given day.”**

context Location

inv: self.schedule  $\rightarrow$  forAll(s1, s2 | s1  $\neq$  s2 implies  
(s1.timeslot.day  $\neq$  s2.timeslot.day  
or s1.timeslot.startTime  $\neq$  s2.timeslot.startTime))

**2. “The same type of lesson can be offered in both modes (private, group)”**

context Offering

inv: this.allInstances()  $\rightarrow$  forAll(o1, o2 | o1  $\neq$  o2 and o1.lessonName = o2.lessonName implies  
o1.lessonType  $\neq$  o2.lessonType)

**3. “All offerings are made available to potential instructors, but only those that have been taken by instructors are made available to the public”**

context Offering

inv: self.instructorId  $\neq$  0

-- In our system, 0 represents that no instructor is assigned to the offering

**4. “The public can view the organization’s available offerings. However, in order to make a booking, one must first become a client”**

context Booking::createBooking(account: Account, offering: Offering)

pre:

account.isInstanceOf(Client)

**5. “For someone who is underage (i.e. less than 18 yrs old), they would need an adult who will be acting as their legal guardian who can handle their bookings.”**

context Client

inv: self.age < 18 implies self.guardian  $\rightarrow$  notEmpty()

context Booking::createBooking(client: Client, guardian: Guardian, offering: Offering)

pre:

client.age  $\geq$  18 or (client.age < 18 and client.guardian = guardian)