

4)

1. 125ms
2. Minisat did not show up
3. ^^^

5)

1. Viz, tree, XML
2. 8
3. Most recent one
4. The size of the type scopes and the SAT solver used

9)

1. Addr
2. 0

10) 1

11)

1. You can have at most 3 of each type
2. There can only be one book

12)

1. The new show predicate adds a new constraint to the model that says that the address books must have more than one address in them. The previous one allowed a book with one or less addresses.
2.  $\#b.addr > 1$  means that we want the number of addresses for b to be more than one

13) lone

16) some name n means that the lookups require the same name,  $\text{Name } \#Name.(b.addr) > 1$  means that it just had to be a name, not necessarily the same one.

20)

1. Two
2. show for 3 but 1 Book and add for 3 but 2 Book

21) They stuff in parenthesis are tags to show which name that have in the predicate

22)

1. The left and right sides are switched
2. This is not an assignment, it is just something to match

24)

1. This function returns a set of Addresses

2. Predicates are series of things that have to match, functions are about taking input and providing output

25) Alloy finds a counterexample for when you add a record that was already in the original book.

26) It ensures that the original book does not have the name that we are going to add

27)

1. 26ms
2. 110ms