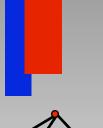
Miscellaneous Issues

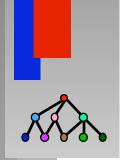


- **■** Frame Functions
- Saving and Restoring
- CLOS Classes
- Mix and Match Inferencing



add-type <instance> <concept>
 "assert that <instance> ISA <concept> "
get-types <instance>
 "retrieve all concepts satisfied by <instance>"

Frame Functions: Setting Role Fillers



add-value <instance> <role> <filler>

"add <filler> to the set of fillers of role <role> on instance <instance>"

set-value <instance> <role> <filler>

"set <filler> to be the only filler of role <role> on instance <instance>"

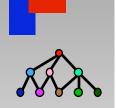
only recommended for single-valued roles

set-values <instance> <role>
 <list-of-fillers>

"make each filler in list-of-fillers> be a filler of role <role> on instance <instance>"

Always requires a list, even for single valued roles.

Frame functions



get-value <instance> <role>

"retrieve the single filler of role <role> on instance <instance>"

Error if there is more than one value.

get-values <instance> <role>

"return the set of fillers of role <role> on instance <instance>"

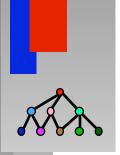
Always returns a list of fillers.



Knowledge Bases and contexts can be saved to files

■ The save files can be compiled and loaded into Loom images to restore the state of the knowledge base.

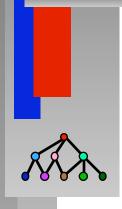
CLOS Classes



Execute the following:

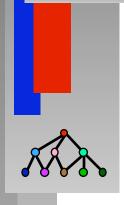
```
(creation-policy :clos-instance)
   (defconcept Ship
      :roles ((name :type String)
              length))
   (create nil 'Ship)
Side-effects:
   (defrelation name)
   (defrelation length)
   (eval '(defclass Ship (THING)
              ((name :initform nil)
                (length :initform nil))))
   (make-instance 'Ship)
```

Mix and Match Inferencing



- INSTANCE-IN-CONTEXT at creation time, adds an instance to the concept-instance index
- INSTANCE-WITH-CONCEPTS permits more than one type to be asserted on an instance
- INSTANCE-WITH-INVERSES

 automatically adds and removes inverse
 links in response to slot updates
- INSTANCE-WITH-DYNAMIC-SLOTS non-preallocated slots use alist storage on an instance



- INSTANCE-WITH-NEGATION

 supports negated type and negated role filler assertions
- INSTANCE-WITH-HISTORIES record (in a differential history) the prior states of an instance
- INSTANCE-IN-MATCH-NETWORK instance participates in matches that trigger production rules
- INSTANCE-WITH-TIME supports temporal assertions