```
rel_mng_static  THM

⊢  ∀r:rel(), rho,ds,da,de,e,s,a,tr,tr':Top.
|  ¬rel_mentions_trace(r) ⇒
|  ([[r]] rho ds da de e s a tr' ∼ [[r]] rho ds da de e s a tr)
| by D 0 THENA Auto THEN D 1 THEN Unfold ‘rel_mng‘ 0 THEN

|       Reduce 0  THEN
|  Assert ∀rho,ds,da,de,e,s,a,tr,tr',x:Top.
|    ¬rel_mentions_trace(<name,r1>) ⇒
|    (list_accum(x,t.x
|                  ([[t]] 1of(e) s a tr');x;r1) ∼ ...)
|
|\
| .....assertion .....
| 1. name : relname()
| 2. r1 : Term List
| ⊢  ∀rho,ds,da,de,e,s,a,tr,tr',x:Top.
| |  ¬rel_mentions_trace(<name,r1>) ⇒
| |  (list_accum(x,t.x
| |                  ([[t]] 1of(e) s a tr');x;r1) ∼ ...)
| | by ListInd (-1) THEN All (Fold ‘mk_rel‘)
|
| |       THEN All (Unfold ‘rel_mng‘) THEN All Reduce
|
| |       THEN Try (Complete Auto)
| |
| 1. name : relname()
| 2. Term List
| 3. u : Term
| 4. v : Term List
| 5. ∀rho,ds,da,de,e,s,a,tr,tr',x:Top.
| |  ¬rel_mentions_trace(mk_rel(name, v)) ⇒
| |  (list_accum(x,t.x
| |                  ([[t]] 1of(e) s a tr');x;v) ∼ ...)
| ⊢  ∀rho,ds,da,de,e,s,a,tr,tr',x:Top.
| |  ¬rel_mentions_trace(mk_rel(name, [u / v])) ⇒
| |  (list_accum(x,t.x
| |                  ([[t]] 1of(e) s a tr');...;v) ∼ ...)
| | by ...
| |  THEN D 0 THENA Auto
| |
| |
| 1. name : relname()
| 2. Term List
| 3. u : Term
| 4. v : Term List
| 5. Top
| 6. Top
| 7. Top
| 8. Top
| 9. e : Top
| 10. s : Top
| 11. a : Top
| 12. tr : Top
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| 13. tr' : Top
| 14. ∀x:Top.
| |   ¬rel_mentions_trace(mk_rel(name, v)) ⇒
| |   (list_accum(x,t.x
| |                  ([[t]] 1of(e) s a tr');x;v) ∼ ...)
| 15. x : Top
| 16. ¬rel_mentions_trace(mk_rel(name, [u / v]))
| ⊢  list_accum(x,t.x
| |                ([[t]] 1of(e) s a tr');...;v) ∼ ...
| | by Subst [[u]] 1of(e) s a tr' ∼ [[u]] 1of(e) s a tr 0
| |
| |\
| | .....equality .....
| | 1. name : relname()
| | 2. Term List
| | 3. u : Term
| | 4. v : Term List
| | 5. Top
| | 6. Top
| | 7. Top
| | 8. Top
| | 9. e : Top
| | 10. s : Top
| | 11. a : Top
| | 12. tr : Top
| | 13. tr' : Top
| | 14. ∀x:Top.
| | |   ¬rel_mentions_trace(mk_rel(name, v)) ⇒
| | |   (list_accum(x,t.x
| | |                  ([[t]] 1of(e) s a tr');x;v) ∼ ...)
| | 15. Top
| | 16. ¬rel_mentions_trace(mk_rel(name, [u / v]))
| | ⊢  [[u]] 1of(e) s a tr' ∼ [[u]] 1of(e) s a tr
| | | by BackThruLemma `term_mng_static` THEN Auto
| | |
| | 1. name : relname()
| | 2. Term List
| | 3. u : Term
| | 4. v : Term List
| | 5. Top
| | 6. Top
| | 7. Top
| | 8. Top
| | 9. e : Top
| | 10. s : Top
| | 11. a : Top
| | 12. tr : Top
| | 13. tr' : Top
| | 14. ∀x:Top.
| |     ¬rel_mentions_trace(mk_rel(name, v)) ⇒
| |     (list_accum(x,t.x
| |                  ([[t]] 1of(e) s a tr');x;v) ∼ ...)
| | 15. Top
| | 16. ¬rel_mentions_trace(mk_rel(name, [u / v]))
| | ⊢  ¬mentions_trace(u)
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| |   by ...
| |    THEN RW assert_pushdownC 0 THENA Auto THEN SimpConcl
| |
| .\
| . 1. name : relname()
| . 2. Term List
| . 3. u : Term
| . 4. v : Term List
| . 5. Top
| . 6. Top
| . 7. Top
| . 8. Top
| . 9. e : Top
| . 10. s : Top
| . 11. a : Top
| . 12. tr : Top
| . 13. tr' : Top
| . 14. ∀x:Top.
| . |   ¬rel_mentions_trace(mk_rel(name, v)) ⇒
| . |   (list_accum(x,t.x
| . |                   ([[t]] 1of(e) s a tr');x;v) ∼ ...)
| . 15. x : Top
| . 16. ¬rel_mentions_trace(mk_rel(name, [u / v]))
| . ⊢  list_accum(x,t.x
| . |                 ([[t]] 1of(e) s a tr');...;v) ∼ ...
| . | by BackThruHyp (-3) THEN Auto
| . |
| . 1. name : relname()
| . 2. Term List
| . 3. u : Term
| . 4. v : Term List
| . 5. Top
| . 6. Top
| . 7. Top
| . 8. Top
| . 9. e : Top
| . 10. s : Top
| . 11. a : Top
| . 12. tr : Top
| . 13. tr' : Top
| . 14. ∀x:Top.
| . |   ¬rel_mentions_trace(mk_rel(name, v)) ⇒
| . |   (list_accum(x,t.x
| . |                   ([[t]] 1of(e) s a tr');x;v) ∼ ...)
| . 15. Top
| . 16. ¬rel_mentions_trace(mk_rel(name, [u / v]))
| . ⊢  ¬rel_mentions_trace(mk_rel(name, v))  by Parallel0p (-1)
| . |
| . 1. name : relname()
| . 2. Term List
| . 3. u : Term
| . 4. v : Term List
| . 5. Top
| . 6. Top
| . 7. Top
```

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| . 8. Top
| . 9. e : Top
| . 10. s : Top
| . 11. a : Top
| . 12. tr : Top
| . 13. tr' : Top
| . 14. ∀x:Top.
| .     ¬rel_mentions_trace(mk_rel(name, v)) ⇒
| .     (list_accum(x,t.x
| .                     ([[t]] 1of(e) s a tr');x;v) ∼ ...)
| . 15. Top
| . 16. rel_mentions_trace(mk_rel(name, v))
| . ⊢  rel_mentions_trace(mk_rel(name, [u / v]))
| .   by All (\i. Unfold `rel_mentions_trace` i THEN Reduce i)
| .
| .         THEN RW assert_pushdownC 0 THENA Auto THEN SimpConcl
|
.\
. 1. name : relname()
. 2. r1 : Term List
. 3. ∀rho,ds,da,de,e,s,a,tr,tr',x:Top.
.    ¬rel_mentions_trace(<name,r1>) ⇒
.    (list_accum(x,t.x
.                    ([[t]] 1of(e) s a tr');x;r1) ∼ ...)
. ⊢  ∀rho,ds,da,de,e,s,a,tr,tr':Top.
.    ¬rel_mentions_trace(<name,r1>) ⇒
.    ...
.   by Repeat (ParallelOp (-1) THEN Thin (-3))
.
.         THEN SimpleInstHyp [[name]] rho 2of(e)
.       (-1) THENA Auto THEN NthHyp (-1)
.
END
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