```
mouse:
1     mouse(jerry).
2     mouse(jerrys-nephew).

cat:
1     cat(tom).
2     cat(stumpy).

old:
1     old(jerry).
2     old(tom).

young:
1     young(jerrys-newphew).
2     young(stumpy).

thing:
1     thing(X, jerry) :- cat(X).
2     thing(X, Y) :- mouse(X), cat(Y), young(X), young(Y).



at start

      goal:
            thing(A, B).
      backtrack possibilities
            none

step 1, unify with thing[1]

      goal:
            {A=X, B=jerry} cat(X)
      backtrack possibilities
            thing(A, B) [from rule 2]

step 2, unify with cat[1]

      goal:
            {A=X, B=jerry, X=tom}
      backtrack possibilities
            {A=X, B=jerry} cat(X) [from rule 2]
            thing(A, B) [from rule 2]

step 3, goal satisfied, print solution, backtrack

      goal:
            {A=X, B=jerry} cat(X) [from rule 2]
      backtrack possibilities
            thing(A, B) [from rule 2]

step 4, unify with cat[2]

      goal:
            {A=X, B=jerry, X=stumpy}
      backtrack possibilities
            thing(A, B) [from rule 2]
```

```
step 5, goal satisfied, print solution, backtrack

      goal:
           thing(A, B) [at rule 2]
      backtrack possibilities
           none

step 6, unify with thing[2]

      goal:
           {A=X, B=Y} mouse(X), cat(Y), young(X), young(Y)
      backtrack possibilities
           none

step 7, unify with mouse[1]

      goal:
           {A=X, B=Y, X=jerry} cat(Y), young(X), young(Y)
      backtrack possibilities
           {A=X, B=Y} mouse(X) [from rule 2], cat(Y), young(X), young(Y)

step 8, unify with cat[1]

      goal:
           {A=X, B=Y, X=jerry, Y=tom} young(X), young(Y)
      backtrack possibilities
           {A=X, B=Y, X=jerry} cat(Y) [from rule 2], young(X), young(Y)
           {A=X, B=Y} mouse(X) [from rule 2], cat(Y), young(X), young(Y)

step 9, attempt to unify with young[1] fail, young[2] fail; backtrack

      goal:
           {A=X, B=Y, X=jerry} cat(Y) [from rule 2], young(X), young(Y)
      backtrack possibilities
           {A=X, B=Y} mouse(X) [from rule 2], cat(Y), young(X), young(Y)

step 10, unify with cat[2]

      goal:
           {A=X, B=Y, X=jerry, Y=stumpy} young(X), young(Y)
      backtrack possibilities
           {A=X, B=Y} mouse(X) [from rule 2], cat(Y), young(X), young(Y)

step 11, attempt to unify with young[1] fail, young[2] fail; backtrack

      goal:
           {A=X, B=Y} mouse(X) [from rule 2], cat(Y), young(X), young(Y)
      backtrack possibilities
           none

step 12, unify with mouse[2]

      goal:
           {A=X, B=Y, X=jerrys-nephew} cat(Y), young(X), young(Y)
      backtrack possibilities
           none
```

```
step 13, unify with cat[1]

     goal:
          {A=X, B=Y, X=jerrys-nephew, Y=tom} young(X), young(Y)
     backtrack possibilities
          {A=X, B=Y, X=jerrys-nephew} cat(Y) [from rule 2], young(X), young(Y)

step 14, unify with young[1]

     goal:
          {A=X, B=Y, X=jerrys-nephew, Y=tom} young(Y)
     backtrack possibilities
          {A=X, B=Y, X=jerrys-nephew, Y=tom} young(X) [from rule 2], young(Y)
          {A=X, B=Y, X=jerrys-nephew}, cat(Y) [from rule 2], young(X), young(Y)

step 15, attempt to unify with young[1] fail, young[2] fail; backtrack

     goal:
          {A=X, B=Y, X=jerrys-nephew, Y=tom} young(X) [from rule 2], young(Y)
     backtrack possibilities
          {A=X, B=Y, X=jerrys-nephew}, cat(Y) [from rule 2], young(X), young(Y)

step 16, attempt to unify with young[2], fail; backtrack

     goal:
          {A=X, B=Y, X=jerrys-nephew}, cat(Y) [from rule 2], young(X), young(Y)
     backtrack possibilities
          none

step 17, unify with cat[2]

     goal:
          {A=X, B=Y, X=jerrys-nephew, Y=stumpy} young(X), young(Y)
     backtrack possibilities
          none

step 19, unify with young[1]

     goal:
          {A=X, B=Y, X=jerrys-nephew, Y=stumpy} young(Y)
     backtrack possibilities
          {A=X, B=Y, X=jerrys-nephew, Y=stumpy} young(X) [from rule 2], young(Y)

step 20, attempt to unify with young[1] fail, young[2] succeed

     goal:
          {A=X, B=Y, X=jerrys-nephew, Y=stumpy}
     backtrack possibilities
          {A=X, B=Y, X=jerrys-nephew, Y=stumpy} young(X) [from rule 2], young(Y)

step 21, goal satisfied, print solution, backtrack

     goal:
          {A=X, B=Y, X=jerrys-nephew, Y=stumpy} young(X) [from rule 2], young(Y)
     backtrack possibilities
          none
```

```
step 19, unify with young[2]

      goal:
            {A=X, B=Y, X=jerrys-nephew, Y=stumpy} young(Y)
      backtrack possibilities
            none

step 20, unify with young[1] fail, young[2] succeed

      goal:
            {A=X, B=Y, X=jerrys-nephew, Y=stumpy}
      backtrack possibilities
            none

step 21, goal satisfied, print solution, backtrack

      goal:
            none

all done

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```