

Course > 6b: Mutual Reference > Mutually Recursive Data > Problems 1-3

## Problems 1-3

## Question 1

1/1 point (graded)
Label each arrow with either R for Reference, SR for Self-Reference or MR for Mutual-Reference.

```
(dafine_struct person (name gender children))
;; Person is (make-person String Gender ListOfPerson)
;; interp. a person with first name, gender and a list of their children
                                                                                                 MR
      (cons Person ListOfPerson)
;; Gender is one of"
;; - "M"
;; - "F"
;; interp. "M" means male, "F" means female
         R
                           SR
                                               MR
```

 $\begin{tabular}{ll} \P & \end{tabular} Answers are displayed within the problem \\ \end{tabular}$ 

## Question 2

Label each arrow with either R for Reference, SR for Self-Reference or MR for Mutual-Reference. (The arrows are coloured to help distinguish between them).

```
(define-struct woman (name sons daughters))
;; Woman is (make-woman String ListOfMan ListOfWoman)
;; interp. a woman with name, list of her sons, and list of her daughters
             (define-struct man (name sons daughters))

//; Man is (make-man String ListOfMan ListOfWoman)

//; interp. a man with name, list of his sons, and list of his daughters

//; ListOfWoman is one of:

SR

// empty
// (cons Woman ListOfWoman)
// interp. a list of women

MR
MR
              ;; ListOfMan is one of: SR
              ;; - empty
;; (cons Man ListOfMan)
;; interp. a list of men
                   R
                                             SR
                                                                          MR
```

Answers are displayed within the problem

## Question 3

1/1 point (graded) Consider the following files and directoires:

```
(define F1 (make-elt "F1" 1 empty))
(define F2 (make-elt "F2" 2 empty))
(define D3 (make-elt "D3" 0 (list F1)))
(define D4 (make-elt "D4" 0 (list F2 D3)))
```

D4 F2 D3			
D4 F2 D3   F1			
D3 F2   D4			
D4 F1 F2 D3			
planation contains F2 and D3, which itself co	ntains F1		