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Problem Bank Style Rules Design Recipes Language Glossarv Discussion Progress Course > 4a: Self-Reference > List Data Definition > Question 1-2 Previous \blacksquare Ø, Question 1-2 ☐ Bookmark this page Questions 1-2 2/2 points (graded) Consider the following Data Definition: ;; ListOfNatural is one of: ;; - empty ;; - (cons Natural ListOfNatural) Is \mathtt{empty} a ListOfNatural? In other words, does \mathtt{empty} match the type ListOfNatural? yes C no • **Explanation** Yes, ${\tt empty}$ is the first case, so it matches the type ListOfNatural. Is (cons 1 (cons 1.5 empty)) a ListOfNatural? o yes no Explanation First we look at the case (cons Natural ListOfNatural) and ask is 1 Natural? The answer is yes. Then we ask if (cons 1.5 empty) is ListOfNatural. This requires 1.5 to be Natural, which it is not, so (cons 1 (cons 1.5 empty) is not a ListOfNatural. 0 Show 1 Answers are displayed within the problem Question 3 1/1 point (graded) Consider the following partial data definition: ;; Mystery is one of: ;; - (cons Natural Mystery) Which of the following match the type mystery? (cons 2 empty) (cons 1 empty) □ empty Explanation For the first option, 2 is of type Natural, but empty is not a Mystery, so it does not match. The second option is exactly (cons 1 empty) In the third option, 5 is of type Natural, so we need to check if (cons 4 (cons 1 empty)) is a mystery. Next, we see that 4 is Natural, so we need (cons 1 empty) to be a Mystery, which it is. In the fourth case, empty is neither (cons 1 empty) nor (cons Natural Mystery).





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