

广义表运算

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1 约定

多元素元组表示方式: (x_1, x_2, x_3, \dots)

单元素元组表示方式: $(x,)$

2 求广义表运算的结果

$$\text{Head}[(a, b), (c, d)] = (a, b)$$

$$\text{Tail}[(a, b), (c, d)] = ((c, d),)$$

$$\text{Head}[\text{Tail}[(a, b), (c, d)]] = (c, d)$$

$$\text{Tail}[\text{Head}[(a, b), (c, d)]] = (b,)$$

$$\text{Head}[\text{Tail}[\text{Head}[(a, b), (c, d)]]] = b$$

$$\text{Tail}[\text{Head}[\text{Tail}[(a, b), (c, d)]]] = (d,)$$

3 利用Head和Tail运算取出原子c

$$L_1 = (a, b, c, d);$$

$$c = \text{Head}[\text{Tail}[\text{Tail}[L_1]]].$$

$$L_2 = ((a, b), (c, d));$$

$$c = \text{Head}[\text{Head}[\text{Tail}[L_2]]].$$

$$L_3 = (((a,), (b,), (c,), (d,)));$$

$$c = \text{Head}[\text{Head}[\text{Tail}[\text{Tail}[L_3]]]].$$

$$L_4 = (a, (b,), ((c,),), (((d,),),));$$

$$c = \text{Head}[\text{Head}[\text{Head}[\text{Tail}[\text{Tail}[L_4]]]]].$$

$$L_5 = (((((a,),),), ((b,),), (c,), d));$$

$$c = \text{Head}[\text{Head}[\text{Tail}[\text{Tail}[L_5]]]].$$

$$L_6 = (((((a,), b), c), d);$$

$$c = \text{Head}[\text{Tail}[\text{Head}[L_6]]].$$

$$L_7 = (a, (b, (c, (d,))));$$

$$c = \text{Head}[\text{Head}[\text{Tail}[\text{Head}[\text{Tail}[L_7]]]]].$$

$$L_8 = (a, (b, (c,), d));$$

$$c = \text{Head}[\text{Head}[\text{Tail}[\text{Head}[\text{Tail}[L_8]]]]].$$