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4.1

- a. Union: {1,2,3,4,5}
- b. Intersection: {3}
- c. Difference: {1,2}
- d. Member: 1
- e. Insert: A = {1,2,3}
- f. Delete: A = {2,3}
- g. Min: 1

4.7

Open hash table

0	343(342 mod 7=0)					
1	1(1 mod 7=1)	-->	8(8 mod 7=1)	-->	64(64 mod 7=1)	
2						
3						
4						
5						
6	27(27 mod 7=6)	-->	125(125 mod 7=6)	-->	216(216 mod 7=6)	

Closing hash table

0	125
1	1
2	8
3	64
4	216
5	343
6	27

4.10

```
Table1 = array[0...B1]  
Table2 = array[0...B2]
```

```
procedure REPLACE(t1: Table1, var t2: Table2)  
var  
    current: $\uparrow$   
begin:  
    MAKENULL(t2);  
    for i=1 to B1 do begin  
        current $\uparrow$  = t1[i]  
        while current < $\neq$  nil do begin  
            INSERT(current $\uparrow$ .element, t2)  
            current = current $\uparrow$ .next  
        end  
    end  
End
```

4.11

$k = 3(11 \text{ in binary}), 7(111 \text{ in binary}) \text{ or } 15(1111 \text{ in binary})$

When $2d_{i-1} < 16$, d_i has the range [1...14]

When $2d_{i-1} < 16$, if $k = 3, 7$ or 15 , the formula has the range [1...15]

So combine them together, the range is [1...15]