



Interrompi

ESERCIZIO

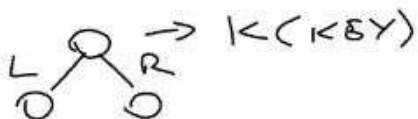
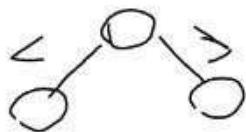
ESERCIZIO(A)

→ HSAP

→ ALBERI

→ ARRAY → MERGES (LOGICO)  
QUICK→ MERGESORT(A)

→ VARIANTI DI ALBERI

X.P. (ARRICHIMENTO =  
SAPERE LE FUNZIONI DI  
BST)



Interrompi

$$\text{DIFF} \rightarrow A[i] - A[j] = k$$

$$\text{FOR } (i) \text{ } (n)$$

$$\text{FOR } (j) \text{ } (n) \rightarrow (n^2)$$

...

$$\downarrow (i, j)$$

$$\rightarrow \text{WHILE } (\dots) \rightarrow (n)$$

$$(i, j)$$


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$$\text{DIFF}(A, k)$$

$$\text{IF } (k == \text{NIL}) \text{ RETURN NIL}$$

$$N = A.\text{LENGTH}$$

$$\text{FOR } (i = 1 \text{ TO } N)$$

$$\text{FOR } (j = 1 \text{ TO } N)$$

$$\text{IF } (A[i] - A[j] = k)$$

$$\text{RETURN } (i, j)$$




IF  $(A[I] - A[J]) < K$

I++

J--

IF  $(A[I] - A[J]) > K$

J++

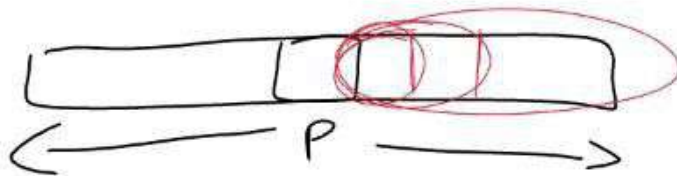
I--

→ WHILE  $(A[I] - A[J]) < > K$

DE  $I > J \rightarrow I--$

J++

else → VICEVERSA



CORRETTURA



$(1, 3) \rightarrow m = 0$   
 $[l = 0, r = 0]$

$\rightarrow (m+1) \rightarrow \dots$

$m \geq 1, \quad i \leq 3$

$A[i] - A[j] \leq K$

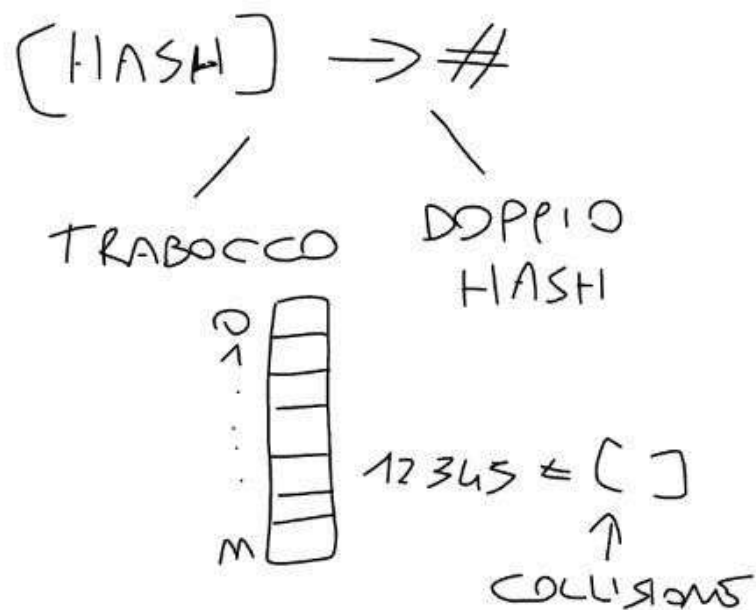
$[A[i-1] < A[i] < A[j]]$

$\dots K$

$i++ \dots K$

INVARIANTS  $\rightarrow$  ITERATION

$[i \leq 3]$



$f(m) \dots - \dots$

$\rightarrow$  COLLISIONS

$m=1 \quad ( \dots )$

↑  
USO 1A





$m = 1$  ( ) ... ( )  
 ↑  
 USO LA  
 FORMULA

$h(k) = k \bmod m \rightarrow 8$

$\rightarrow 28, 19, 10, 35, 26$

0	1	2	3	4	5	6	7
				28			

$$28 \bmod 8 = 4$$

( 35  $\rightarrow$  28 )

28 (COLLISIONS)

35  $\rightarrow$  28



Interrompi

DOPPIO HASH



$$h(K, i) = (h_1(K) + i \cdot h_2(K)) \bmod m$$

$i = 0 \rightarrow$  AD OGNI PRIMO  
INSERIMENTO

[Se collisione  $\rightarrow i = 1$ ]

$$K = 12$$

$$h(12, 0) = (h_1(K) + 0 \cdot \cancel{h_2(K)}) \bmod m$$

$$\begin{aligned} h_1 &= K \bmod m = 12 \bmod 8 = 4 \\ &= 4 \bmod 8 = 4 \end{aligned}$$





Interrompi

$$-4 \bmod 8 = 4$$

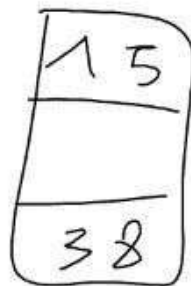
COLLISIONS

$$\rightarrow h(38, 1) =$$

$$(h_1(k) + i \cdot h_2(k)) \bmod (m)$$

$$(38 \bmod 8) + 1(1 + 38 \bmod 6) \bmod 8$$

$$= \dots \textcircled{1}$$



— (NUOVA  
(USATA))