

APriori algorithm

Input: \mathcal{A}, \mathcal{D} as an array of subsets of $\mathcal{A}, \mu \in \mathbb{N}$

Output: $\{X \subseteq \mathcal{A} \mid f(X, \mathcal{D}) \geq \mu\}$

$\mathcal{P} \leftarrow \{\{a\} \mid a \in \mathcal{A}\}$

while $\mathcal{P} \neq \emptyset$ **do**

$\mathcal{P} \leftarrow \text{output_frequent}(\mathcal{P}, \mathcal{D}, \mu)$

$\mathcal{P} \leftarrow \text{children}(\mathcal{P})$

end while

children

Input: A lexicographically ordered collection $\mathcal{P} \subseteq 2^{\mathcal{A}}$

Output: $\{X \subseteq 2^{\mathcal{A}} \mid \forall a \in X, X \setminus \{a\} \in \mathcal{P}\}$ lexico. ordered

$\mathcal{P}' \leftarrow \emptyset$

for all $P_1 \in \mathcal{P}$ **do**

for all $P_2 \in \{P_2 \in \mathcal{P} \mid P_1 \prec P_2 \wedge P_2 \setminus \{\mathbf{last}(P_2)\} = P_1 \setminus \{\mathbf{last}(P_1)\}\}$

do

$X \leftarrow P_1 \cup P_2$

if $\forall P \in \{X \setminus \{\mathbf{member}(X)\} \mid P_2 \prec P\}, P \in \mathcal{P}$ **then**

$\mathcal{P}' \leftarrow \mathcal{P}' \cup \{X\}$

end if

end for

end for

return \mathcal{P}'

children

Input: A lexicographically ordered **collection** $\mathcal{P} \subseteq 2^{\mathcal{A}}$

Output: $\{X \subseteq 2^{\mathcal{A}} \mid \forall a \in X, X \setminus \{a\} \in \mathcal{P}\}$ lexico. ordered

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do

$X \leftarrow P_1 \cup P_2$

if $\forall P \in \{X \setminus \{\mathbf{member}(X)\} \mid P_2 \prec P\}, P \in \mathcal{P}$ **then**

$\mathcal{P}' \leftarrow \mathcal{P}' \cup \{X\}$

end if

end for

end for

return \mathcal{P}'

Example

minsup = 2

TID	Items
100	1 3 4
200	2 3 5
300	1 2 3 5
400	2 5

Scan D

itemset	sup.
{1}	2
{2}	3
{3}	3
{4}	1
{5}	3

→

itemset	sup.
{1}	2
{2}	3
{3}	3
{5}	3

itemset	sup.
{1 3}	2
{2 3}	2
{2 5}	3
{3 5}	2

←

itemset	sup.
{1 2}	1
{1 3}	2
{1 5}	1
{2 3}	2
{2 5}	3
{3 5}	2

Scan D

itemset
{1 2}
{1 3}
{1 5}
{2 3}
{2 5}
{3 5}



itemset
{2 3 5}

Scan D

itemset	sup.
{2 3 5}	2

