[illegible] 004.93

[illegible]
[illegible]

[illegible]

[illegible]

[illegible]

[illegible] [1, 2].

[illegible] ([illegible]), [illegible] «[illegible]».

[illegible] D (1):

$$D = \{T_1, T_2, ..., T_{N_D}\}, \quad (1)$$

[illegible] [3], [illegible] T_j, $j = 1, 2, ..., N_T$ [illegible], [illegible] $N_D = |D|$ – [illegible] ([illegible]) [illegible] D.

[illegible] T_j [illegible] (2):

$$T_j = (tid_j, item_j), \quad (2)$$

[illegible] tid_j – [illegible] j-[illegible] T_j; $item_j = \{t_{1j}, t_{2j}, ..., t_{N_{item_j} j}\} \subseteq I$ – [illegible], [illegible] T_j; t_{ij} – i-[illegible] $item_j$, $i = 1, 2, ..., N_{item_j}$; $N_{item_j} = |item_j|$ – [illegible] $item_j$; $I = \{\tau_1, \tau_2, ..., \tau_{N_I}\}$ – [illegible] $item_j$ [illegible] T_j, $j = 1, 2, ..., N_T$ [illegible] D; τ_a – [illegible] I, $a = 1, 2, ..., N_I$; $N_I = |I|$ – [illegible] I.

[illegible] T_j [illegible] (3):

$$T_j = item_j = \{t_{1j}, t_{2j}, ..., t_{N_I j}\}, \quad (3)$$

[illegible] t_{ij} – i-[illegible] j-[illegible] T_j [illegible] (4):

$$t_{ij} = \begin{cases} 1, & [illegible]\ \tau_i\ [illegible]\ T_j; \\ 0, & [illegible]. \end{cases} \quad (4)$$

[illegible] T_j [illegible] D [illegible] $item_j$, [illegible] I.

[illegible] AR [illegible] $X \rightarrow Y$, [illegible] X [illegible] Y [illegible] (5) [3–5]:

$$X \rightarrow Y: \; X \subset I, \; Y \subset I, \; X \cap Y = \varnothing. \quad (5)$$

[illegible] "[illegible] X [illegible] Y" [illegible] "[illegible] X, [illegible] Y" [3].

[illegible] AR [illegible] D ([illegible]) [illegible] $\tau_a \in I$, $a = 1, 2, \ldots, N_I$ [4].

[illegible]

[illegible]

[illegible]

[illegible] $X \subset I$ [illegible] D [illegible] $\text{supp}(X)$, [illegible] (6) [3–5]:

$$\text{supp}(X) = \frac{N_{T \in D | X \subseteq T}}{N_D}, \tag{6}$$

[illegible] $N_{T \in D | X \subseteq T}$ – [illegible] T [illegible] D, [illegible] X.

[illegible] X [illegible] D [illegible] $\text{supp}(X)$ [illegible] minsupport, [illegible] [3, 4].

[illegible] $\text{supp}(X \to Y)$ [illegible] $X \to Y$ [illegible] $X \cup Y$ (7):

$$\text{supp}(X \to Y) = \text{supp}(X \cup Y). \tag{7}$$

[illegible] $X \to Y$ [illegible] [3–5].

[illegible] $\text{conf}(X \to Y)$ [illegible] $X \to Y$ [illegible] (8) [4, 5]:

$$\text{conf}(X \to Y) = \frac{\text{supp}(X \cup Y)}{\text{supp}(X)}. \tag{1.8}$$

[illegible] minconfidence($X \to Y$).

[illegible] D, [illegible] [3–5].

[illegible] [3–5]:

– [illegible] X [illegible] minsupport(*м*), [illegible] $X \subset I$;

– [illegible] $X \to Y$ [illegible] minconfidence($X \to Y$).

[illegible] $D = \{T_1, T_2, \ldots, T_{N_T}\}$, [illegible] [3, 4]. [illegible] ε_I.

[illegible] [3–7]:

[illegible] (Piatetsky-Shapiro). [illegible] $X \to Y$ [illegible] (9):

$$\operatorname{supp}(X \to Y) \approx \operatorname{supp}(X)\operatorname{supp}(Y). \tag{9}$$

[illegible] (9) [illegible] X [illegible] Y [illegible] $\frac{\operatorname{supp}(X \to Y)}{\operatorname{supp}(X)\operatorname{supp}(Y)} > 1$, [illegible] Y [illegible] X [illegible]. [illegible] $\frac{\operatorname{supp}(X \to Y)}{\operatorname{supp}(X)\operatorname{supp}(Y)} < 1$ [illegible] Y [illegible] X [illegible] [6];

[illegible] $X \to Y$ [illegible] (10):

$$\left| \frac{\operatorname{supp}(X \to Y)}{\operatorname{supp}(X)\operatorname{supp}(Y)} - 1 \right| \geq \varepsilon_I , \tag{10}$$

[illegible] ε_I [illegible] $\frac{\operatorname{supp}(X \to Y)}{\operatorname{supp}(X)\operatorname{supp}(Y)} - 1 \geq \varepsilon_I$ [illegible] $X \to Y$ [illegible] $-\left(\frac{\operatorname{supp}(X \to Y)}{\operatorname{supp}(X)\operatorname{supp}(Y)} - 1 \right) \geq \varepsilon_I$ [illegible] $X \to \overline{Y}$ [7].

[illegible] $X \to Y$, [illegible] (11):

$$\begin{cases} \operatorname{supp}(X \to Y) \geq \text{minsupport}; \\ \operatorname{conf}(X \to Y) \geq \text{minconfidence}; \\ \left| \operatorname{supp}(X \to Y) / \operatorname{supp}(X)\operatorname{supp}(Y) - 1 \right| \geq \varepsilon_I . \end{cases} \tag{11}$$

[illegible]:

[illegible] $D = \{T_1, T_2, ..., T_{N_T}\}$, [illegible] $T_j \subseteq I$, [illegible] $I = \{\tau_1, \tau_2, ..., \tau_{N_I}\}$;

[illegible] minsupport([illegible]), [illegible] minconfidence($X \to Y$) [illegible] ε_I. [illegible] minsupport([illegible]) [illegible] minconfidence($X \to Y$) [illegible] ([illegible]), [illegible].

[illegible]

[illegible] [3–10]. [illegible].

[illegible] « [illegible] » (SCF, Support-Confidence Framework) [3, 8] [illegible].

[illegible] [8]:

[illegible] ([illegible]) [illegible]: $\operatorname{supp}(X) \geq \text{minsupport}$;

[illegible] A, [illegible]

$ \text{conf}(X \to Y) \geq \text{minconfidence}$.

Если $\text{supp}(Y) \geq \text{minsupport}$, то $\text{conf}(X \to Y) \geq \text{minconfidence}$, $X \subset Y$, $\forall Y \subset A$, $X = A - Y$.

Если $X \subset Y$, то $\text{supp}(Y) \leq \text{supp}(X)$. (12)

Если $\text{supp}(X) < \text{minsupport}$, то $\text{supp}(Y) < \text{minsupport}$, $X \subset Y$, $Y \subset I$.

[illegible] [10].

[illegible] Apriori [illegible] D (1) [illegible] [3, 6, 10]. [illegible] D [illegible]

[illegible] Apriori [illegible]

[illegible] D (1) [illegible] Apriori: AprioriTID [illegible] AprioriHybrid [3ï 7].

[illegible] AprioriTID [illegible] D (1) [illegible] [3ï 7]. [illegible] D, [illegible] Apriori [illegible] AprioriTID [illegible] D, [illegible] [4, 6, 7].

[illegible] D, [illegible]

[illegible] AprioriTID [illegible] D [illegible]

[illegible] AprioriHybrid [illegible] Apriori [illegible] AprioriTID [illegible] [3ï 5]. [illegible] Apriori [illegible] AprioriTID [illegible] t- [illegible] t- [illegible]

[illegible] AprioriHybrid [illegible] Apriori [illegible] AprioriTID.

[illegible] (DHP, Direct Hashing and Pruning) [illegible] [3, 5, 11]. [illegible] t- [illegible] t- [illegible] [11]. [illegible] t- [illegible] t- [illegible]

[illegible] Apriori, [illegible] DHP [illegible] minsupport [11].

[illegible] DHP [illegible] H_2, [illegible] C_t [illegible] H_t, [illegible] t-[illegible] [11].

[illegible] Apriori, [illegible] DHP [illegible] AprioriTID [illegible] AprioriTID [illegible] AprioriHybrid, [illegible] DHP [illegible] DHP [illegible].

[illegible] Partition ([illegible]) [illegible] D (1) [illegible] [12]. [illegible] Partition [illegible] Apriori, [illegible] [3, 12].

[illegible] Partition [illegible] [12].

[illegible] D (1) [illegible] Apriori [illegible] [3–5, 10], [illegible] Eclat [illegible] 1997 [illegible] M. Zaki [6, 13].

[illegible] Eclat [illegible] Apriori [13]. [illegible] Eclat [illegible] Apriori, [illegible] [13].

[illegible] Eclat [illegible] Apriori [10, 13]. [illegible] Partition.

[illegible] Apriori [illegible] Eclat [illegible] Hybrid, [illegible] Apriori, [illegible] Eclat. [illegible] Apriori [illegible] Eclat.

[illegible] FPG (Frequent Pattern Growth, [illegible]) [5–7] [illegible] Eclat [illegible]

lstɑȷʁɬzᵍ ʰ ȷʔ ʟdɑΘɤɑʃlsȷdzdʒ ⊐ ΘʃȷʃΘɬɛΘʌsdʒ ⊐ tɑȷfɲɬɑtɛfɲtsɔ, Θ lsΘ⊆ɤȷ ɬzdsȷdʒʰ ɑʃlsᴵ ʜts ʜɔɬz⊐ ⊆tsdɑʃɤɯȷfɲʎɔts ʃȷtɑts⊐tsʜtsɔ ʁΘLʳ ʜΘɬdʒ ⊐ *D* (1).

∫ ȷlstsʜ FPG ʃȷtɑȷʜʃȷtsdΔΘʳΘ⊆ls dΔΘ dΔΘɤɑΘɬz dΔsdʒᴵ lsΘʃȷ ʃȷtɑȷtsʁtɛΘLtsɔΘɬdΔɑȷ ʁΘLʳ ʜΘɬdʒ ⊐ *D* (1) ɔ ʜtɑȷɔtsɔɑʃʜdʒᵍ fɲʎtɛdz⊆lʎtɛlz ï ʜȷtɑȷɔts ʃȷtsʃȷzdʒʷtɛdz ⊐ dΔΘʁtstɑtsɔ. ɪ Θʎsȷdʒ dʒȷlstsʜ tsʁ⊐tsʜɑʃls ʜȷtɑȷɔts ᴵ dȷdʒȷdʌstsɔ ɔ ɠdʒʁɑʃɑʃdʒ ʃȷɑtɛɔtsɑ⁻ts ʃȷtstɛʷʜ⊆Θ, tɑΘfʰ ɑʃtɛʷʷ dΔΘʁtstɛ ᴵ dȷdʒȷdʌstsɔ. ⊆ lsΘ ʃȷtɑtsɯȷʜzɬɛΘ ʃȷtɑtsɑʃfɲ⊐tsʜɑʃls ʜts lsȷ⊐ ʃȷtstɛ, ʃȷts⊆Θ dȷ ʁzʜȷls ʜtsfʎsɑʃɠdʒzlsΘ ɑ⁻tɛΘɬdΔɑʃɯΘ dʒȷʏʜz ɯΘfʎsʳ dʒ ɑʃ tɑȷʜ⊆ɑʃdʒ dΔΘʁtstɑtsdʒ ᴵ dȷdʒȷdʌstsɔ. ɪ tsfɯȷ ᴵ lstsɑ⁻ts dʒȷlstsʜ ɔtsLɔtɛΘᵍ Θ⊆lsfᵐ ʜdʒʷ tɛΘʁtslsʳ fɲʎs fɯȷʜzᵍ ʰ ɑʃdʒ ᴵ dȷdʒȷdʌstsdʒ (ɔ dȷ⊆fɯ⊆tsɑ⁻tɛΘᵂ ɑʃɯȷfɲ⊆tsdʒʃȷtstɛʷʜ⊆ȷ).

ɭ ȷʜtsfʎsΘls⊆tsdʒdʒȷlstsʜΘFPG ʷɔdʒʷȷlsfᵐ dȷȷtsʁ⊐tsʜɑʃdΔsfʎsᴵ fɲʎsLʜΘɬdΔɑʃᵂ ʜtɑȷɔtsɔɑʃʜdΔs? fʎsɬdz⊆lʎtɛᶜ , ɯlstsɬΘ⊆ɤȷ ɬstɑȷʁzȷls ʟdɑΘɤɑʃlsȷdzdʒ ⊐ ɔʳ ɯɑʃfɯɬzɑʃlsȷdzdʒ ⊐ tɑȷfɲɬɑtɛfɲtsɔ.

ʊΘ⊆ɑʃdʒ tsʁtɛΘɬtsdʒ ɔʳ ʷɔdȷɑɬzdʒȷ ʃȷtɑtsʁdȷɑdʒ fɲʒʰ ȷfɲsɔzᵍ ʰ ɑʃ⊐ dȷȷlstsʜtsɔ fɯȷʃdΔsȷʟΘ ɸɪ tsʁzfɯɬzɔdɑʃɔᵂ ls dȷȷtsʁ⊐tsʜɑʃdΔsfʎsᴵ tɛΘɬtɛΘʁtslsʳ⊆ɑʃ dΔsɔʳ ⊐ dȷȷlstsʜtsɔ, ɑʃfʎ⊆ʒ ɯΘᵍ ʰ ɑʃ⊐ dȷȷʜtsfʎsΘls⊆tsɑʃ fɲʒʰ ȷfɲsɔzᵍ ʰ ɑʃ⊐.

ʉ ɑʃfʎsȷdʒΘ⊆tɑʃlsȷtɑʃɑʃȷɔ fɯɬΘɔ dȷdʒɑʃᵂ dȷȷlstsʜtsɔ ʃȷtsɑʃfʎ⊆ΘΘfɲɯsɯɑʃΘlsɑʃɔ dʒ ⊐ ʃȷtɛΘɔɑʃdz

∫ ȷlstsʜʳ ɑʃʟɔdȷɯȷdɑʃᵂ ɸɪ dȷtsɑ⁻ɬzlsʁʳ lsᴵ ⊆dΔΘfɲɯʃᵂɑʃɯȷfɛtsɔΘɬdz ʃȷts fɯȷʜzᵍ ʰ ɑʃdʒ⊆tɑʃlsȷtɑʃᵂdʒ

ï ʃȷts fɯȷtsfɲɬsʁzlz ⊐tɛΘɬdȷdɑʃᵂ ʃȷtɛtsdʒȷɤȷɬzlstsɯdʒ ⊐ tɑȷʟɬzdʒlsΘlstsɔ. ʃ dʒʷ ⊐tɛΘɬdȷdɑʃᵂ ʃȷtɛtsdʒȷɤȷɬzlstsɯdʒ ⊐ tɑȷʟɬzdʒlsΘlstsɔ ʃȷtsɑʃfʎ⊆Θ (dʒdʌstsɤȷfɲsɔΘ ⊆ΘdΔʜɑʃʜΘlstsɔ, ɑʃ⊐ ʃȷtsʜʜȷtɛɤȷ⊆, ɯΘfʎsʳ ⊐ dΔΘʁtstɛtsɔ) ɑʃfɯȷtsdzʟɬzᵍ lsfᵐ: ⊐ȷʰ -ʜȷtɑȷɔts, ⊐ȷʰ -lsΘʁdɑʃɯʳ , ʃȷtɑȷᵂ ɑʃ⊆fɯɬzȷ ȷ ʜȷtɑȷɔᴵʷ. ⊆ Θɤʜʳʔ ɬzʟȷdz⊐ȷʰ -ʜȷtɑȷɔΘ fɲʃʜȷtɑȷɤɑʃls dzɑʁts fɯȷɑʃfɲʃ⊆ dΔΘʁtstɛtsɔ, ɑʃ lstsɑʜΘtsdzʷɔdzʷȷlsfᵐ dzɑʃfʎstsdʒ dzɑʁts fɲʃʜȷtɑȷɤɑʃls ⊐ȷʰ -lsΘʁdɑʃɯlz (ɔ lsΘ⊆tsdʒ fɯɬzɯΘ⊆ tsdzʷɔdzʷȷlsfᵐ ɔdzdstɑȷɑdzdɑʃdʒ ʟLdstsdʒ). I ⊐ȷʰ -lsΘʁdɑʃɯȷ LΘɑʃɑʃfɯȷ ɔdzdstɑȷɑdzdɑʃ⊐ ʟLdstsɔ fɲʃʜȷtɑȷɤΘs fɲʃʳ dΔ⁻ɑʃ dΔΘ ʟLdz -ʃȷtslstsdʒ⊆ɑʃ. I ʃȷtɑȷᵂ ɑʃ⊆fɯɬzstsdʒ ʜȷtɑȷɔȷ ɔ ⊆Θɤʜtsdz ʟLdȷ fɲʃʜȷtɑȷɤɑʃlsfᵐ lstsdz⊆ts *t*-? ᴵ dȷdʒȷdʌstsdΔΘʁtstɛΘ ΘtsfʎsΘdz ȷ ᴵ dȷdʒȷdʌstsʳ tsʃȷtɑȷʜȷtɑzᵂᵍ lsfᵐ ɯȷtɑȷʟ tɛtsʜɑʃlsȷdzfʎ⊆ɑʃȷ ʟLdz ʜΘdɬdʌstsɠts [6, 7];

ï ʃȷts fɯȷtsfɲɬsʁzlz ʃȷtsʜʜfɲɯȷlsΘ ʃȷtsʜʜȷtɛɤȷ⊆ ʃȷtɛɑ⁻ ʃȷtsɑʃfʎ⊆ȷ ʃȷtslsȷdzɯɑʃΘdz dΔsɯΘfʎsʳ ⊐ dΔΘʁtstɛtsɔ ᴵ dȷdʒȷdʌstsɔ (⊆ΘdΔʜɑʃʜΘlstsɔ): ʃȷȷtɑȷfɲȷɯȷdɑʃȷ ɑʃ ɑʃdΔ⁻tɑȷdʒȷdʌs. ɪ tɛɑ⁻ ɑʃfɯȷtsdzʟɬzɔΘdΔɑʃɑʃ ʃȷȷtɑȷfɲȷɯȷdɑʃᵂ ʟdΔΘɯȷdɑʃᵂ ʃȷtsʜʜȷtɛɤȷ⊆ɑʃ $\mathrm{supp}(X)$ ⊆ΘdΔʜɑʃʜΘlstsɔ X tsʃȷtɑȷʜȷtɑzᵂᵍ lsfᵐ ʃȷlzlsȷdʒ dΔ⊐tsɤʜȷdɑʃᵂ ʃȷȷtɑȷfɲȷɯȷdɑʃᵂ dʒdʌstsɤȷfɲsɔΘ ɑʃʜȷtɑȷdΔsᵂɑʃ⊆Θstsɛtsɔ tid_j lstɛΘdΔ⁻Θʃɯɑʃʔ T_j , fɲʃʜȷtɛɤΘᵍ ɑʃ⊐ ᴵ dȷdʒȷdʌstsʳ dʒdʌstsɤȷfɲsɔΘ **ʍ**. ɪ tɛɑʃdʒȷdȷdɑʃȷ ɑʃdΔ⁻tɑȷdʒȷdʌsΘ ʃȷtsʜtɛΘʟzdʒȷɔΘ⊆ls dȷʃȷtsfɯɑȷʜfɲsɔȷdɑzʔ ʃȷtsʜfɲɯȷls ⊆tsdɑʃɯȷfɲsɔΘɔ⊐tsɤʜȷdɑʃʔ dΔΘʁtstɛΘᴵ dȷdʒȷdʌstsɔ **ʍ** ɔ ʁΘLʒ ʜΘɬdʒ ⊐ *D* [3, 4, 7];

ï ʃȷts fɯȷtsfɲɬsʁzlz ʃȷtɛts⊐tsʜΘʃȷts ʁΘLȷ: ɔʰ ɑʃtɛɑʃdzɑʃ ɑʃ ɔ ɠdʒʁɑʃdz. ɪ tɛɑʃ ʃȷtɛts⊐tsʜȷ ɔʰ ɑʃtɛɑʃdzɑʃ fɯȷΔΘɯΘdΔΘ ʃȷtɛtsɔȷtɛʷᵍ lsfᵐ ɔfɯȷ tsʜdʌsᴵ dȷdʒȷdʌstsdz ȷ dΔΘʁtstɛʳ , ʟΘʎsȷdʒʜɔzᴵ dȷdʒȷdʌstsdz ȷ ɑʃ lsΘ⊆ ʜts lsȷ⊐ ʃȷtstɛ, ʃȷts⊆Θdȷ ʁzʜȷls fɯᵂtstɛdʒɑʃtɛtsɔΘdΔz ɔfɯȷ dΔΘʁtstɛʳ . ʊΘ⊆ɑʃdʒ tsʁtɛΘɬtsdʒ ⊆tsdɑʃɯȷfɲsɔts fɲʃΘdɑʃtɛtsɔΘdΔɑʃ? ʁΘLʳ ʜΘɬdʒ ⊐ *D* (1) tɛΘɔdʌs ɯɑʃfɯɬzᴵ dȷdʒȷdʌstsɔ ɔ fɯΘdʌstsdʒ ʜdɑʃdʌsdʒ ɯΘfʎsʳ dʒ ɑʃ tɑȷʜ⊆ɑʃdʒ dΔΘʁtstɑtsdʒ ᴵ dȷdʒȷdʌstsɔ. ɪ tɛɑʃ ɑʃfɯȷtsdzɬzɔΘdΔɑʃɑʃ ʃȷtɛtsɑ⁻tsʜΘɠdʒʁɑʃdz ɔʳ ʃȷtsdzʷȷlsfᵐ tɛΘfʎsʳ ɑʃtɛɑʃdzȷ dΔΘʁtstɛΘᴵ dȷdʒȷdʌstsɔ X , ʃȷts⊆Θdȷ ʁzʜȷls ʜtsfʎsɑʃɠdʒʁɑʃdz ɯΘfʎsʳ dʒ ɑʃ tɑȷʜ⊆ɑʃdʒ dΔΘʁtstɑtsdʒ ᴵ dȷdʒȷdʌstsɔ, ʃȷtsfɯȷ ᴵ lstsɑ⁻ts ʃȷtɛtsɑʃfʎ⊆tsʜɑʃls ʃȷȷtɑȷ⊐tsʜ ⊆ fɯȷʜzᵍ ʰ ȷdʒz ᴵ dȷdʒȷdʌstsz τ_a , ʃȷtɛɑʃ ᴵ lstsdʒ ʃȷȷtɑȷʜ tɛΘʁtslstsʔ dʒȷlstsʜΘ ᴵ dȷdʒȷdʌstsʳ $\tau_a \in I$ ʟzʃȷtstɛʷʜtsɯɑʃɔΘᵂ ls ɔ dȷ⊆fɯɬzɑʃtɛtsɠᵂɑʃɯȷfɲ⊆tsdʒʃȷtstɛʷʜ⊆ȷ .

ʉ tɛΘɔdʌsɑʃlsȷdzdΔΘᵂ ⊐ΘɠΘ⊆ɑʃlsȷtɑʃɑʃfɲsɑʃ⊆Θ tsfɯɬzɔdz ⊐ dȷȷlstsʜtsɔ ʃȷtsɑʃfʎ⊆Θ ΘfɲɯsɯɑʃΘlsɑʃɔ dʒ ⊐ ʃȷtɛΘɔɑʃdz ʃȷtɛɑʃɔȷʜȷdΔΘɔ lsΘʁdɑʃɯȷ 1 (*k* ï ɬstsdʒɑʃɯȷ fɲsɔts ᴵ dȷdʒȷdʌstsɔ fɯΘdʒtsɠts ʜdɑʃdʌsɠts ɯΘfʎsts ɔfɲstɑȷɯΘᵍ ʰ ȷɠtsfᵐ dΔΘʁtstɛΘ).

ʊΘʁdɑʃɯΘ1

ʉ tɛΘɔdʌsɑʃlsȷdzdΔΘᵂ ⊐ΘɠΘ⊆ɑʃlsȷtɑʃɑʃfɲsɑʃ⊆Θdȷ ȷdʒȷdʌstsʜtsɔ ʃȷtsɑʃfʎ⊆Θɸɪ

∫ ȷlstsʜʳ ʃȷtsɑʃfʎ⊆Θ ɸɪ	ʉ ʃȷtsfɲɬsʁ ⊐tɛΘɔdȷdɑʃᵂ tɑȷʟɬzdʒlsΘlstsɔ	ʉ ʃȷtsfɲɬsʁ ʃȷtsʜfɲɯȷlsΘ ʃȷtsʜʜȷtɛɤȷ⊆ɑʃ	ʉ ʃȷtsfɲɬsʁ ʃȷtɛts⊐tsʜΘ ʃȷts ʁΘLȷ	⊆ tsdɑʃɯȷfɲsɔts ʃȷtɛts⊐tsʜtsɔ ʃȷts ʁΘLȷ
Apriori	⊐ȷʰ -ʜȷtɑȷɔts	ɑʃdΔ⁻tɑȷdʒȷdʌs	ɔʰ ɑʃtɛɑʃdzȷ	*k*
AprioriTid	⊐ȷʰ -ʜȷtɑȷɔts	ɑʃdΔ⁻tɑȷdʒȷdʌs	ɔʰ ɑʃtɛɑʃdzȷ	1

Apriori Hybrid	⊐ȷʰ -нȷtɑȷɔts	ɑdΔ≤tɑȷdϱȷdΔs	ɔʰ ɑtɑɑʃdΔz	*k*
DHP	⊐ȷʰ -lsΘвdɑʃɑΘ	ɑdΔ≤tɑȷdϱȷdΔs	ɔʰ ɑtɑɑʃdΔz	1
Partition	ʃʃtɑȷʷ ɑʃ≤fɑΔsȷ нȷtɑȷɔts	ʃʃȷtɑȷfпȷɑȷɑʃȷ	ɔʰ ɑtɑɑʃdΔz	*k*
Eclat	ʃʃtɑȷʷ ɑʃ≤fɑΔsȷ нȷtɑȷɔts	ʃʃȷtɑȷfпȷɑȷɑʃȷ	ɔ ɢdΔzвɑʃdΔz	1
Hybrid	ʃʃtɑȷʷ ɑʃ≤fɑΔsȷ нȷtɑȷɔts	ɔʰ ɑtɑɑʃdΔz / ʃʃȷtɑȷfпȷɑȷɑʃȷ	ɔʰ ɑtɑɑʃdΔz / ɔ ɢdΔzвɑʃdΔz	*k*
FPG	ʃʃtɑȷʷ ɑʃ≤fɑΔsȷ нȷtɑȷɔts	ɑdΔ≤tɑȷdϱȷdΔs	ɔ ɢdΔzвɑʃdΔz	1

ʈ ȷ ʟΔzdz lsΘls' ʃʃtɑtsɔȷ нȷ dɑΔtsɢts ΘΔΘΔʃΟ ʃʃts≤ΟΟΔʃ, ɑlsts tsfɑΔsɔdz dϱʃ ʃʃtɑtsвdȷdϱΘdϱʃ dϱȷlstsнtsɔ ɑʃɔdȷɑȷɑʃʷ ϕ↴ ʷɔdzʁ lsfɑʸ [3, 6, 7, 14]:

ï ʟdΔΘɑʃlsȷdzdΔΘʸ ɔtɑȷdϱȷdΔΔΘʸ fɑΔsʏ dΔsfɑls' ʃʃtsɑʃfȷ≤Οϕ↴ ;

ï ɔʳ fɑȷ≤ɑʃȷ lstɑȷвtsɔΘdΔʃʷ ≤ tsвʲ ȷ dϱΘdϱ ʃʃΘdϱʷlsɑʃ, fɑϱʷʟΘdΔdz ȷ fɑȷs ʟdΔΘɑʃlsȷdzdz dϱʃ tɑΘʟdϱȷtɑΘdϱʃ ΘdΔΘΔʃʟɑʃtɑΔȷdϱ ⊐ вΘʟ нΘdΔdz ⊐. Ɪ dȷ≤tslststɑ⊐ fɑΔdzɑΘʸ⊐ tsвʲ ȷ dϱɑʃfɑȷɑȷȷнlzȷdϱ ⊐ нΘdΔdz ⊐ *D* dϱsʏȷ ls ɔ tɑΘʳ ʃʃtɑȷɔʳ ʰ Θls' tsвʲ ȷ dϱнtsfɑȷslzʃɑΔs≤? tsʃȷtɑΘlsɑʃɔΔs≤? ʃʃΘdϱʷlsɑʃ;

ï dȷɑtsв⊐tsнɑʃdϱsfɑȷs' dȷɑffȷtsdz≤ɑʃ⊐ ʃʃtɑts⊐tsнtsɔ ʃʃts ɑfɑfɑȷɑȷнlzȷdϱ dϱвΘʟΘdϱнΘdΔdz ⊐;

ï dȷɑtsв⊐tsнɑʃdϱsfɑȷs' tsвʲ fɑȷʃȷ ɑȷȷ dɑʃʷ ʃʃtsɑʃfȷ≤Ο ɑʃdΔsȷtɑȷfɑȷz ⊐ ɑʃ dȷɑlstɑʃɔɑʃΘdΔz dz ⊐ ʃʃtɑΘ⊐ɑʃdz ʟ tsdzʰ ɑʃdΔfɑȷs≤ts dϱȷlstsнtsɔ ɑʃʟɔdȷɑȷɑʃʷ ϕ↴ lzυɑʃlsʳ ɔΘʸ ls lstsdz≤ts lzɑtsɔȷdz ʃʃtsннȷtɑ≤ȷ≤ɑʃ ɑʃ нtsfɑȷstsɔȷtɑdΔsfɑȷsɑʃ ʃʃtɑΘ⊐ɑʃdz ʃʃtɑɑʃ ↴ lstsdϱ dȷɑ ΘdΔΘΔʃʟɑʃtɑΔzȷlsfʸ ɑʃdΔsȷtɑȷfɑȷdΔsfɑȷs' ʃʃtɑΘ⊐ɑʃdz нdz' ɑʃfɑȷɑȷнlzȷdϱ≤? ʃʃtɑȷнdϱȷlsdΔs≤? tsвdΔfɑȷsɑʃ;

ï ʃʃtɑtsвdȷdϱ ɔʳ вtstΘʃʃtstɑtsɑts≤ʳ ⊐ʟdΔΘυȷdɑʃ? ʃʃtsннȷtɑ≤ɑ≤ɑʃ ɑʃ нtsfɑȷstsɔȷtɑdΔsfɑȷsɑʃ.

Ş tɑtsdϱȷ lstsɑ'ts, ʃʃtɑtsΘΔΘΔʃʟɑʃtɑtsɔΘdΔz ȷ dϱȷlstsнʳ ʃʃtsʟɔtsdzʷʁ ls ɑʃʟɔdȷ≤Θlsʲ ϕ↴, tsнdΔ≤ts dȷɑ ʃʃtsʟɔtsdzʷʁ ls tɑȷʰ Θls' ʟΘнΘυɑʃ ɑʃdΔsȷdΔȷ≤lsΔzΘdz dΔsɑ'ts ΘdΔΘΔʃʟΘ нΘdΔdz ⊐ (tslsвtstɑ ɑʃdΔʷtstɑdϱΘsɑʃɔdz ⊐ ʃʃtɑʃʟɑΔ≤ts, ≤Δɑfɑȷsȷtɑdz ? ΘdΔΘΔʃʟ, ʃʃtsfɑȷstɑtsȷdɑȷȷ dϱsнȷdȷ≤? dΔΘ tsfɑΔsɔȷ вtsdzʰ ɑʃ⊐ dϱɑfɑfɑȷɔtsɔ dȷ≤fɑȷstɑz≤lsΔzɑtɑʃtɑtsɔΘdΔdz ⊐ нΘdΔdz ⊐ ɑʃ нtɑ), ɔtsʟdΔʃ≤Θʸ ʰ ɑʃȷ ɔ tɑȷΘdz dz ⊐ ʃʃtɑΘ≤lsɑʃυȷfȷ≤ɑʃ⊐ ʟΘнΘυ⊐ ʃʃtɑtsɑ'ΔsʟɑʃtɑtsɔΘdΔɑʃʷ, ≤Δɑfɑȷfɑȷɑʃʷ ɑʃ≤Θυɑʃɑʃɑʃʷ ɑʃ≤ΔɑfɑȷsȷtɑɑʃʟΘυɑʃɑʃ нΘdΔdz ⊐.

Ɪʳ ɔtsнʳ

Ɪ tɑΘвtslsȷ ʃʃtɑtsΘΔΘΔʃʟɑʃtɑtsɔΘdΔz ɑʃʟɔȷ fɑȷsdz ȷ dϱȷlstsнʳ fɑȷʃɑΔsȷ ʟΘ ΘfɑfɑȷsυɑʃΘsɑʃɔdz ⊐ ʃʃtɑΘ⊐ɑʃdz ɑ Ɪ tɑȷ ʟdΔΘls ΘΔΘΔʃʟɑʃtɑtsɔΘdΔdz ɔʳ ʷɔdȷdΔs, ɑlsts dϱȷlstsнʳ ʃʃtsfɑȷstɑtsȷdɑʃʷ ΘfɑfɑȷsυɑʃΘsɑʃɔdz ⊐ ʃʃtɑΘ⊐ɑʃdz tɑȷʰ Θʸ ls ʟΘнΘυlz ʃʃtsɑʃfȷ≤Ο υɑΘfɑȷs' ⊐ dΔΘвtstɑtsɔ tɑΘʟdΔʃυdz dϱʃ fɑȷʃtsfɑȷsвΘdϱʃ, ≤Θ↴нʳ ? ɑʃʟ ≤tslststɑ⊐ ɑʃdϱȷlsȷ fɑȷtsɑʃ ʃʃtɑȷɑʃdϱdzʰ ȷ fɑȷs≤Θɑʃ dȷɑнtsfɑȷsΘls≤ɑʃ. Ɪʳ ʷɔdȷdΔs, ɑlsts dϱȷlstsнʳ tslsdΔʃυΘʸ lsfʸ нtɑdzɢtsls нtɑdzɢΘʃʃts lzнtsвfɑȷs≤lz ʃʃtɑɑʃdϱȷdȷɑdΔʃʷ, lstɑȷвtsɔΘdΔʃʷdϱ≤ Θʃʃʃ Θtɑ⊐Θsdz dϱ fɑtɑȷ нfɑȷs≤Θdϱ ɑʃ≤ ɑʃ fɑȷts? fɑȷs≤Θdϱ вΘʟ нΘdΔdz ⊐, ʃʃts ≤tslststɑʳ dϱ ʃʃtɑtsɑʃʟɔtsнɑʃlsfʸ ʃʃtsɑʃfȷ≤.

↴ tɑȷнdtsʏȷ dΔΘfɑʃfɑȷsȷdϱΘ≤tɑɑʃlsȷtɑɑʃȷɔ, ʃʃtsʟɔtsdzʷʁ ʰ Θʸ ɔʳ вɑʃtɑΘls' ↴ʷʷȷ≤lsɑʃɔdz ? dϱȷlstsн fɑʃʃdΔsȷʟΘ ϕ↴ ɔ ʟΘɔɑʃfɑʃʃdϱsfɑȷsɑʃ tsls tsfɑȷsвȷdΔdzsfɑȷsȷ? tɑȷʰ Θʃȷdϱs? ʟΘнΘυɑʃ ɑʃ lstɑȷвtsɔΘdΔɑ≤? ≤ ΘʃʃʃΘtɑΘвΘsdz dϱ tɑȷ fɑȷzɑfɑȷstɑ≤?

ʈ ΘвtslsΘ ɔʳ ʃʃtsdΔʃȷdΔΘ ɔ tɑΘdϱ≤ΘΤ ɑtsfɑȷʁ нʏȷ≤lsdΔs≤? ʅ ʀ ʈ ≤ΘΨȷ≤нtɑʳ tɑΘнɑʃtslsȷ⊐dɑʃ≤ɑʃ ɑʃ lsȷdȷ≤ɑ≤dϱdΔɑʃ≤Θυɑʃ? ʅ Θʃʃtɑtsɔʏ fɑȷ≤tsɑts ɑΔΘυɑʃtsdΔΘΔzdΔsɑts lsȷ⊐dɑʃυȷ fɑȷtsɑts lzdɑʃɔȷtɑfɑʃɑȷlsȷlsΘ ñʃ ȷ lstsнʳ , dϱsнȷdɑʃ ɑʃ lzfɑȷstɑ≤? fɑȷs≤Θ ʃʃtɑɑʃdz'lsɑʷ tɑȷʰ ȷdΔɑʃ? ɔ fɑʃʃfɑȷsȷdϱΤ tɑΘfɑʃʃtsʟdΔɔΘdΔɑʷ tsвtɑΘʟts≤ò (¯ ɑtsfɑȷ tɑȷɢɑʃfɑȷstɑΘυɑʃɑʃ 0111U000059), Θ lsΘ≤ʏȷ ɔ tɑΘdϱΤ ʅ ʀ ʈ ⌈ ɹ 04922 «ʀ dΔsȷdzdȷ≤lsΔzΘdz dz ȷ ɑʃdz'tstɑdϱΘυɑʃtsdΔdz ȷ lsȷ⊐dΔsdΔsɢɑʃ Θlstsdϱ≤lsɑʃʟΘυɑʃɑʃ ʃʃtɑtsȷ≤lsɑʃtɑtsɔΘdΔɑʃʷ, dϱsнȷdɑʃtɑtsɔΘdΔɑʃʷ, lzʃʃtɑΘ≤dȷɑdΔɑʃʷ ɑʃ нɑʃΘɢdΔsfɑȷsɑʃtɑtsɔΘdΔɑʃʷ ʃʃtɑtsɑʃʟɔtsнfɑȷsɔȷdΔdz ⊐ ʃʃtɑtsυȷ fɑȷfɑȷsȷdϱ ɑʃ fɑʃʃfɑȷsȷdϱ».

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