[illegible] 004.93

[illegible]
[illegible]

[illegible]

[illegible]

[illegible]

[illegible] [1, 2].

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

[illegible] D (1):

$$D = \{T_1, T_2, ..., T_{N_D}\}, \tag{1}$$

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

[illegible] T_j [illegible] (2):

$$T_j = (tid_j, item_j), \tag{2}$$

[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):

$$T_j = item_j = \{t_{1j}, t_{2j}, ..., t_{N_I j}\}, \tag{3}$$

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

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

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

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

$$X \to Y: \; X \subset I, \; Y \subset I, \; X \cap Y = \varnothing. \tag{5}$$

[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]

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

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

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

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

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

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

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

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

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

[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):

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

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

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

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

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

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

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

[illegible]:

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

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

[illegible] A, [illegible]

[illegible] $X \to Y$ [illegible] $\forall Y \subset A$, $X = A - Y$, $\mathrm{conf}\left(X \to Y\right) \geq \mathrm{minconfidence}$.

[illegible]

[illegible] minsupport [illegible] minconfidence , [illegible]

[illegible] (SETM, Set-oriented mining) [illegible] « [illegible] » [3, 6, 9]. [illegible] SQL [illegible] [9].

[illegible] SETM [illegible]

[illegible] Apriori [illegible] [3–7, 10]. [illegible] [10]:

– [illegible] t- [illegible]

– [illegible] t- [illegible]

[illegible] $X \subseteq I$ [illegible] $Y \subseteq I$, [illegible] $X \subseteq Y$. [illegible] [3–7]: [illegible] $Y \subseteq I$ [illegible] $X \subseteq Y$ [illegible] (12):

$$X \subseteq Y: \ \mathrm{supp}\left(Y\right) \leq \mathrm{supp}\left(X\right). \qquad (12)$$

[illegible] $Y \subseteq I$ [illegible] $X \subseteq Y$. [illegible] Apriori [illegible] [10].

[illegible] X [illegible] $\mathrm{supp}\left(X\right) < \mathrm{minsupport}$. [illegible] t- [illegible]

[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 [3ї 7].

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

[illegible] D, [illegible]

[illegible] AprioriTID [illegible]

[illegible] AprioriHybrid [illegible] Apriori [illegible] AprioriTID [illegible] [3ї 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]

ϴʤ ϴʤ ʦ ɠ ʠ ʯ ʤ ʤ ʤ ɮ ʦ ʜ ɪ Apriori, ʤ ɮ ʦ ʜ DHP ɪ ʜ ϴʤ ʝ ʦ ɚ ɱ ʤ ϴ ʙ ʦ ʦ ɕ , ɱ ʟ ʤ ϴ ʯ ʝ ʤ ʠ ʷ ʤ ʒ ʠ ɚ ʓ ʝ ʰ -ɫ ϴ ʙ ʤ ʠ ʯ ʝ , ʤ ʝ ʤ ʰ ʠ ʤ ʒ ʠ ʟ ϴ ʜ ϴʤ ʤ ʦ ɠ ʦ ʧ ʦ ʦ ɠ ʦ ɚ ʦ ɠ ʦ ʟ ʤ ϴ ʯ ʝ ʤ ʠ ʷ minsupport [11].

ʊ ϴ ʠ ʤ ʒ ʦ ʙ ʦ ϴ ʟ ʦ ʤ ʒ ʤ ɮ ʦ ʜ DHP ɱ ʃ ɱ ʦ ʠ ɫ ʠ ʟ ɫ ʤ ʝ ʓ ʵ ɫ ϴ ʃ ʦ ɚ. ɩ ϴ ʧ ʝ ʦ ɚ ʦ ʤ ʒ ʵ ɫ ϴ ʃ ʝ ɚ ʳ ʧ ʦ ʤ ʤ ʝ ɫ ɱ ʧ ʦ ʜ ɱ ʯ ʝ ɫ ʤ ʒ ʤ ɣ ʝ ɱ ɚ ϴ ʦ ʜ ʤ ʵ ʤ ʝ ʤ ʝ ʤ ɮ ʤ ʓ ʯ ϴ ɱ ʦ ɚ ɱ ʦ ʝ ʯ ϴ ʰ ʠ ʓ ɱ ʤ ϴ ʙ ʦ ʦ ʦ ɚ ʠ ɱ ʟ ʜ ϴʤ ʠ ʝ ʓ ʝ ʰ - ɫ ϴ ʙ ʤ ʠ ʯ ʳ H_2, ɚ Ş ɫ ʦ ʦ ʤ ʸ ʟ ϴ ʃ ʠ ɱ ɚ ϴ ɫ ɱ ʧ ʦ ʜ ʝ ʦ ɣ Ş ʠ ɚ ɱ ʓ ʯ ϴ ɱ ʳ ʓ ʜ ɚ ɪ ʓ ʵ ʤ ʝ ʤ ʝ ʤ ɮ ʤ ʓ ʤ ϴ ʙ ʦ ʦ ʦ ɚ. ɩ ϴ ɚ ɫ ʦ ʦ ʦ ʤ ʒ ʵ ɫ ϴ ʃ ʝ ɠ ʝ ʤ ʝ ʦ ʠ ʦ ʤ ʝ ɫ ɱ ʤ ʒ ʤ ɣ ʝ ɱ ɚ ʦ ʧ ʦ ɫ ʝ ʤ ɥ ʠ ϴʤ ʤ ʓ ʯ ϴ ɱ ʦ ɚ ɱ ʦ ʝ ʯ ϴ ʰ ʠ ʓ ɱ ʤ ϴ ʙ ʦ ʦ ʦ ɚ C_t ʤ ϴ ʦ ɱ ʤ ɚ ʝ ʜ ϴʤ ʤ ʓ ʓ ʝ ʰ -ɫ ϴ ʙ ʤ ʠ ʯ ʳ H_t, ʦ ʧ ʦ ʝ ʜ ʝ ʤ ʝ ɫ ɱ ʤ ʒ ʤ ɣ ʝ ɱ ɚ ʦ ʯ ϴ ɱ ʳ ʓ t-ʵ ʤ ʝ ʤ ʝ ʤ ɮ ʤ ʓ ʤ ϴ ʙ ʦ ʦ ʦ ɚ ʠ ʟ ʤ ʒ ʤ ɣ ʝ ɱ ɚ ϴ ʤ ϴ ʙ ʦ ʦ ʦ ɚ Ş ϴʤ ʜ ʠ ʜ ϴ ʦ ɚ. ʊ ʦ ʝ ɫ ʠ ʔ ʵ ɫ ϴ ʃ ʤ ɮ ʦ ʜ ϴ ʦ ɱ ʤ ɚ ϴʤ ʤ ϴ ʤ ʒ ʤ ɣ ʝ ɱ ɚ ϴ ʓ, ʧ ʦ ʤ ɪ ʯ ʝ ʤ ʤ ʓ ʤ ϴ ɚ ɫ ʦ ʦ ʦ ʤ ʒ ʵ ɫ ϴ ʃ ʝ, ʠ ʧ ʦ ʝ ʜ ʤ ϴ ʟ ʤ ϴ ʯ ʝ ʤ ʜ ʤ ɪ ʜ ϴʤ ʝ ʤ ʠ ʷ ʤ ϴ ʙ ʦ ʦ ʦ ɚ ʵ ʤ ʝ ʤ ʝ ʤ ɮ ʦ ɚ, ʤ ɪ ʜ ʦ ɚ ʤ ɫ ɚ ʦ ʦ ɕ ʷ ʸ ʰ ʠ ʓ ʤ ʒ ʠ ʤ ʠ ʤ ʒ ϴ ʤ ʤ ʤ ʒ ʧ ʦ ʦ ʦ ɠ ʦ ɚ ʳ ʤ ʒ ʟ ʤ ϴ ʯ ʝ ʤ ʠ ʷ ʤ ʒ ʟ ϴ ʜ ϴʤ ʤ ʓ ʧ ʦ ʤ ʟ ʦ ɚ ϴ ɫ ʝ ʤ ʝ ʤ ʒ [11].

Ɉ ʦ ɫ ʤ ʠ ʯ ʠ ʝ ʦ ɫ ʤ ʝ ɮ ʦ ʜ ϴ Apriori, ʤ ʝ ɮ ʦ ʜ DHP ϴʤ ϴʤ ʦ ɠ ʠ ʯ ʤ ʤ ʤ ʝ ɮ ʦ ʜ ɪ AprioriTID ɱ Ş ϴʤ ʠ ʦ ʤ ʝ ɫ ʙ ϴ ʟ ɪ ʦ ʜ ʠ ʤ ʦ ϴ ʟ ʤ ϴ ʧ ʝ ʦ ɚ ʦ ʤ ʒ ʵ ɫ ϴ ʃ ʝ. ɩ ʝ ʜ ʦ ɱ ʟ ϴ ɫ Ş ʠ ʤ ʝ ɮ ʦ ʜ ϴ AprioriTID ɪ ɱ ʟ ʦ ϴʤ ʷ ʸ ɫ ɱ ʧ ɪ ɫ ʝ ʤ ʒ ʓ ʝ ʰ ʠ ʦ ʦ ɚ ϴʤ ʠ ʷ ʟ ʤ ϴ ʯ ʝ ʤ ʠ ʔ ʠ ʓ ʦ ϴʤ ʤ ʠ ʷ ɚ ʧ ϴ ʤ ʒ ʷ ɫ ʠ ɫ ʦ ʤ Ş ʦ ʟ ʤ ϴ ʯ ʝ ʤ ʠ ʷ ʧ ʦ ʜ ʜ ʝ ʦ ɣ Ş ʠ ʤ ϴ ʙ ʦ ʦ ϴ ɸ ʤ ϴ ʤ ʦ ɠ ʠ ʯ ʤ ʤ ʤ ʝ ɮ ʦ ʜ ɪ AprioriHybrid, ɚ ʤ ʝ ɮ ʦ ʜ ʝ DHP ʠ ɱ ʧ ʦ ʤ ʟ ɪ ʝ ɫ ɱ ʤ ʝ ɱ Ş ʦ ʤ Ş ʦ ɱ ʧ ʦ ɱ ʙ ʦ ɚ ɠ ʝ ʤ ʝ ʦ ϴ ʯ ʠ ʠ Ş ϴʤ ʜ ʠ ʜ ϴ ʦ ɚ. ʃ ʜ ʤ ϴ ʦ ʤ ʝ ʜ ʦ ɱ ʃ ϴ ɫ Ş ʦ ʤ ʒ ʤ ʝ ɮ ʦ ʜ ϴ DHP ʷ ɚ ʤ ʝ ɫ ɱ ɱ ʤ ʦ ɣ ʤ ʦ ɱ ʃ ʴ ʦ ʝ ϴʤ ʠ ʟ ϴ ʯ ʠ ʠ, ɚ ɱ ʤ ʝ ʜ ɱ ʃ ɚ ʠ ʝ ʯ ʝ ɠ ʦ ʦ ʤ ʤ ʝ ʧ ʦ ʤ ɪ ʯ ʠ ʤ ʰ ʠ ʦ ʦ Ş ʦ ɠ ʦ ʦ ϴ ɱ ʧ ʦ ʦ ɱ ʃ ʦ ϴ ʝ ʤ ʠ ʷ.

Ɉ ʤ ʝ ɮ ʦ ʜ ʝ Partition (ʦ ϴ ʟ ʜ ʝ ʤ ʝ ʤ ʠ ʷ) ʧ ʦ ʦ ʠ ɱ ʦ ʜ ʠ ɫ ʦ ϴ ʟ ʜ ʝ ʤ ʝ ʤ ʠ ʝ ʙ ϴ ʳ D (1) ʤ ϴ ʤ Ş ʦ ɫ ʦ ʦ ɕ ʝ ʤ ʧ ʝ ʦ ʝ ɱ ʝ Ş ϴ ʰ ʠ ʝ ɱ ʦ ʙ ʤ ϴ ɱ ʠ ɫ ϴ ʠ ʤ ʒ ʦ ʙ ʦ ϴ ʟ ʦ ʤ ʒ ʯ ɫ ʦ ʙ ʳ Ş ϴ ɣ ʜ ϴ ʝ ʝ ʯ ϴ ɱ ʴ ʧ ʦ ʤ ʝ ʰ ϴʤ ϴ ɱ ɚ ʦ ʧ ʝ ʦ ϴ ɫ ʠ ɚ ʤ ʔ ʧ ϴ ʤ ʒ ʷ ɫ ʠ Ş ʦ ʤ ʒ ʃ ʴ ʸ ɫ ʝ ʦ ϴ [12]. ʃ ʝ ɮ ʦ ʜ ɱ ʟ ʜ ϴ ɫ ʜ ʤ ʷ Ş ϴ ɣ ʜ ʦ ʔ ɫ ϴ ʦ ʔ ʯ ϴ ɱ ʠ ʯ ϴ ɱ ʳ ʝ ʤ ϴ ʙ ʦ ʦ ɕ ʵ ʤ ʝ ʤ ʝ ʤ ɮ ʦ ɚ, ʤ ϴ ʟ ʳ ɚ ϴ ʤ ʒ ʝ ʤ ʦ Ş ϴʤ ʤ ʤ ʒ ʠ ʯ ϴ ɱ ʤ ʤ ʒ ʠ ʤ ϴ ʙ ʦ ʦ ϴ ʤ ʒ ʠ. ɨ ʦ ɱ ʤ ʧ ʦ ʠ ɱ Ş ϴ ɚ ɱ ʓ ʤ ʦ Ş ϴʤ ʤ ʓ ʯ ϴ ɱ ʳ ʓ ʤ ϴ ʙ ʦ ʦ ʦ ɚ ʦ ʧ ʦ ʝ ʜ ʝ ʤ ʷ ʸ ɫ ɱ ʧ ɠ ʤ ʦ ʙ ϴʤ ʤ ʝ ʯ ϴ ɱ ʳ ʝ ʤ ϴ ʙ ʦ ʦ ɕ . Ɉ ʤ ʝ ɮ ʦ ʜ ʝ Partition ʧ ʦ ʜ ɱ ʯ ʠ ɫ ʳ ɚ ϴ ɫ ɱ ʧ ʤ ʦ ʙ ʲ ʝ ʜ ʠ ʤ ʝ ʤ ʠ ʝ ʧ ʦ ʜ ʜ ʝ ʦ ɣ ʝ Ş ʜ ɚ ɪ ʓ ʤ ϴ ʙ ʦ ʦ ʦ ɚ, Ş ϴ ɚ ʤ ʝ ɮ ʦ ʜ ʝ Apriori, ϴ ʠ ʓ ʧ ʝ ʦ ʝ ɱ ʯ ʝ ʤ ʠ ʝ [3, 12].

ɩ ʝ ʜ ʦ ɱ ʃ ϴ ɫ Ş ʦ ʤ ʒ ʤ ʝ ɮ ʦ ʜ ϴ Partition ʷ ɚ ʤ ʝ ɫ ɱ ʧ ɚ ʦ ʟ ʤ ʦ ɣ ʤ ʦ ɱ ʃ ʴ ɠ ʝ ʤ ʝ ʦ ʠ ʦ ʦ ɚ ϴʤ ʠ ʷ ʙ ʦ ʤ ʰ ʦ ɠ ʦ Ş ʦ ʤ ʠ ʯ ʝ ɱ ʃ ɚ ϴ ʤ ʦ Ş ϴʤ ʤ ʓ ʯ ϴ ɱ ʳ ʓ ʤ ϴ ʙ ʦ ʦ ʦ ɚ, ʯ ɫ ʦ ʧ ʦ ʠ ɚ ʦ ʜ ʠ ɫ Ş ʟ ʤ ϴ ʯ ʠ ɫ ʝ ʤ ʤ ʦ ʤ ɪ ɱ ʤ ʠ ɣ ʝ ʤ ʠ ʸ ʧ ʦ ʦ ʠ ʟ ɚ ʦ ʜ ʠ ɫ ʝ ʤ ʤ ʦ ɱ ʃ ʠ. ɨ ʦ ʵ ɫ ʦ ʤ ɪ ɚ ʦ ʟ ʤ ʦ ɣ ʤ ɱ ʤ ɪ ʯ ϴ ʠ, Ş ʦ ɠ ʜ ϴ ʧ ʦ ɱ ʤ ɠ ʝ ʤ ʝ ʦ ϴ ʯ ʠ ʠ ʤ ϴ ʙ ʦ ʦ ɕ Ş ϴʤ ʜ ʠ ʜ ϴ ʦ ɚ ʠ ʠ ʓ ʧ ʦ ʜ ʜ ʝ ʦ ɣ Ş ʠ ʤ ʝ ʧ ʦ ʤ ʝ ʰ ϴ ɫ ɱ ʧ ɚ ʦ ʧ ʝ ʦ ϴ ɫ ʠ ɚ ʤ ʤ ʸ ʧ ϴ ʤ ʒ ʷ ɫ ʴ [12].

ş ʦ ʦ ʤ ʝ ʤ ʝ ɮ ʦ ʜ ʦ ɚ ʧ ʦ ʠ ɱ Ş ϴ ϴ ɱ ɱ ʃ ʯ ʠ ϴ ɫ ʠ ɚ ʤ ʓ ʧ ʦ ϴ ɚ ʠ ʤ, ʠ ɱ ʧ ʦ ʤ ɪ ʸ ʰ ʠ ʓ ʧ ʦ ʦ ʓ ʦ ʜ ʳ ʧ ʦ ʙ ϴ ʝ ʜ ϴʤ ʤ ʓ D (1) ɚ ʰ ʠ ʦ ʠ ʤ ʤ, ɫ ϴ ʠ ʝ Ş ϴ Apriori ʠ ɚ ɱ ʝ ɠ ʦ ʦ ɫ ʠ ʤ ʒ ʠ ʟ ϴ ʯ ʠ ʠ [3ï5, 10], ɫ ϴ ɣ ʝ ʙ ʳ ʤ ʠ ʦ ϴ ʟ ʦ ϴ ʙ ʦ ɫ ϴ ʤ ʤ ʝ ɮ ʦ ʜ ʳ ʧ ʦ ʓ ʦ ʜ ϴ ɚ ɠ ʤ ʤ ʙ ʠ ʤ ʤ. ʃ ʝ ɮ ʦ ʜ Eclat ʷ ɚ ʤ ʝ ɫ ɱ ʦ ʜ ʤ ʠ ʤ ʒ ʠ ʟ ɫ ϴ ʠ ʓ ʤ ʝ ɮ ʦ ʜ ʦ ɚ ʠ ɚ ʧ ʝ ʦ ɚ ʳ ʝ ʙ ʳ ʤ ʧ ʦ ʝ ʜ ʤ ʦ ɣ ʝ ʤ ɚ 1997 ɠ ʦ ʜ ɪ M. Zaki [6, 13].

ʃ ʝ ɮ ʦ ʜ Eclat ʤ ɚ ʧ ʦ ʤ ʤ ʔ ʤ ʝ ʦ ʠ ɱ ʧ ʦ ʤ ʟ ɪ ʝ ɫ ɱ ʦ ʔ ɱ ɚ ʦ ʤ ʦ ʤ ɫ ʦ ʤ ʤ ʦ ɱ ʃ ʠ ʧ ʦ ʜ ʜ ʝ ʦ ɣ Ş ʠ, ʤ ʟ ϴ ɱ ʯ ʝ ɫ ɫ ʦ ɠ ʦ, ʯ ɫ ʦ ɚ ʤ ʝ ɮ ʦ ʜ ʝ ʤ ϴ ʙ ʦ ʦ ɕ Ş ϴʤ ʜ ʠ ʜ ϴ ʦ ɚ ʵ ʤ ʝ ʤ ʝ ʤ ɮ ʦ ɚ ɱ ʟ ʜ ϴ ɫ ɱ ʧ ʤ ϴ ʦ ɱ ʤ ɚ ʝ ɫ ʦ ʤ Ş ʦ ʜ ɚ ɪ ʓ ʧ ʦ ʜ ʤ ʒ ʤ ɣ ʝ ɱ ɚ, Ş ʦ ʤ ʠ ʯ ʝ ɱ ɚ ʦ ɠ ʝ ʤ ʝ ʦ ʠ ʦ ʤ ʝ ʤ ʒ ʓ Ş ϴʤ ʜ ʠ ʜ ϴ ʦ ɚ ɠ ʦ ʦ ϴ ʟ ʜ ʦ ʙ ʦ ʤ ʰ ʝ, ʯ ʝ ʤ ʒ ʧ ʦ ʠ ʧ ʦ ʦ ʓ ʦ ʜ ʝ ɚ ʰ ʠ ʦ ʠ ʤ ʤ ɱ ʠ ɱ ʧ ʦ ʤ ʟ ʦ ɚ ϴʤ ʠ ʝ ʤ ʒ ʤ ʝ ɮ ʦ ʜ ϴ Apriori [13]. ʃ ʝ ɮ ʦ ʜ Eclat ɠ ʝ ʤ ʝ ʦ ʠ ʦ ʤ ʝ ɫ Ş ϴʤ ʜ ʠ ʜ ϴ ʦ ɚ, ʠ ɱ ʧ ʦ ʤ ʟ ɪ ʷ ɫ ʦ ʤ Ş ʦ ʵ ɫ ϴ ʃ ʦ ʙ ʲ ʝ ʜ ʠ ʤ ʝ ʤ ʠ ʷ ʤ ʝ ɮ ʦ ʜ ϴ Apriori, ʧ ʦ ɱ Ş ʦ ʤ Ş ɪ ʤ ɠ ʝ ʤ ʝ ʦ ʠ ʦ ʤ ʸ ɫ ɱ ʧ ʠ ʟ ʤ ʠ ʰ ʤ ʠ ʝ Ş ϴʤ ʜ ʠ ʜ ϴ ʴ , ʜ ʤ ʷ Ş ʦ ɫ ʦ ʦ ɕ ʓ ʤ ʦ ʙ ʓ ʦ ʜ ʠ ʤ ʦ ʧ ʦ ʠ ʤ ʝ ʤ ʷ ɫ ʴ ʵ ɫ ϴ ʃ ɪ ʜ ϴʤ ʝ ʤ ʠ ʷ [13].

ʃ ʝ ɮ ʦ ʜ Eclat ʦ ʧ ʦ ʝ ʜ ʝ ʤ ʝ ɫ ʧ ʦ ʜ ʜ ʝ ʦ ɣ Ş ɪ ʧ ɪ ɫ ʝ ʤ ʒ ɚ ʳ ʯ ʠ ɱ ʤ ʝ ʤ ʠ ʷ ʧ ʝ ʦ ʝ ɱ ʯ ʝ ʤ ʠ ʔ ɚ ɱ ʓ ʤ ϴ ʙ ʦ ʦ ʦ ɚ, ʯ ɫ ʦ ʙ ʦ ʤ ʝ ʵ ʷ ʷ ʝ Ş ɫ ʠ ɚ ʤ ʦ ʧ ʦ ɱ ʦ ϴ ʤ ʝ ʤ ʠ ʸ ɱ ʟ ɱ ʧ ʦ ɱ ʙ ʦ ʤ ʒ ʠ ɱ ʧ ʦ ʤ ʟ ɪ ʝ ʤ ʒ ʤ ʒ ɚ ʤ ʝ ɮ ʦ ʜ ʝ Apriori [10, 13]. ʃ ʙ ʰ ʝ ʝ Ş ʦ ʤ ʠ ʯ ʝ ɱ ɚ ʦ ɚ ɱ ʓ Ş ϴʤ ʜ ʠ ʜ ϴ ʦ ɚ, ʓ ʦ ϴʤ ʠ ʤ ʒ ʓ ɚ ʦ ʧ ʝ ʦ ϴ ɫ ʠ ɚ ʤ ʔ ʧ ϴ ʤ ʒ ʷ ɫ ʠ, ɱ ʟ ɱ ʃ ϴ ɚ ʤ ʝ ɫ ɚ ɱ ʦ ʝ ʜ ʤ ʝ ʤ ʒ ʤ ϴ ʤ ʒ ʤ ʦ ɠ ʦ ʤ ʝ ʤ ʰ ʝ, ʯ ʝ ʤ ʒ ʧ ʦ ʠ ʠ ɱ ʧ ʦ ʤ ʟ ʦ ɚ ϴʤ ʠ ʠ ʤ ʝ ɮ ʦ ʜ ϴ Partition.

Ɉ Ş ϴ ʯ ʝ ɱ ɚ ʝ ʤ ʦ ʜ ʠ ʷ ʠ Ş ϴ ʯ ʠ ʠ ʤ ʝ ɮ ʦ ʜ ʦ ɚ Apriori ʠ Eclat ʙ ʳ ʤ ʧ ʦ ʝ ʜ ʤ ʦ ɣ ʝ ʤ ɠ ʠ ʙ ʦ ʠ ʜ ʤ ʔ ʤ ʝ ɮ ʦ ʜ Hybrid, Ş ʦ ɫ ʦ ʦ ɕ ʔ ʤ ϴ ʤ ϴ ʯ ϴʤ ʤ ʓ ʵ ɫ ϴ ʃ ϴ ʓ ʦ ɱ ɪ ʰ ʝ ɱ ɚ ʤ ʝ ɫ ʧ ʦ ʠ ɱ Ş ɚ ʰ ʠ ʦ ʠ ʤ ʤ ϴʤ ϴʤ ʦ ɠ ʠ ʯ ʤ ʤ ʤ ʝ ɮ ʦ ʜ ɪ Apriori, ϴ ʟ ϴ ɫ ʝ ʤ ʒ ʧ ʝ ʦ ʓ ʦ ʜ ʠ ɫ Ş ʧ ʦ ʠ ɱ Ş ɪ ɚ ɠ ʤ ʤ ʙ ʠ ʤ ʤ ʧ ʦ ʤ ʝ ɮ ʦ ʜ ɪ Eclat. ɨ ʝ ʦ ʓ ʦ ʜ ʤ ʝ ɣ ʜ ɪ ʤ ʝ ɮ ʦ ʜ ϴ ʤ ʒ ʠ ʦ ʧ ʦ ʝ ʜ ʝ ʤ ʝ ɫ ɱ ʧ ʦ ʤ ʟ ʦ ɚ ϴ ɫ ʝ ʤ ʝ ʤ ʒ ɿ ʤ ϴ ʯ ʠ ɫ ʝ ʤ ʤ ʦ ʝ ɪ ʤ ʯ ʰ ʝ ʤ ʠ ʝ ʧ ʦ ʦ ʠ ʟ ɚ ʦ ʜ ʠ ɫ ʝ ʤ ʤ ʦ ɱ ʃ ʠ ʜ ʦ ɱ ʃ ʠ ɠ ϴ ɫ ɱ ʧ ɚ ɱ ʤ ɪ ʯ ϴ, Ş ʦ ɠ ʜ ϴ ʤ ʝ ɮ ʦ ʜ Apriori ʦ ϴ ʙ ʦ ɫ ϴ ɫ ʜ ʦ ɫ ʝ ʓ ʧ ʦ ʦ ɕ, ʧ ʦ Ş ϴ ʤ ʒ ʤ ʤ ʦ ɣ ʝ ɱ ɚ ʦ ɱ ʝ ʤ ʝ ʦ ʠ ʦ ʦ ɚ ϴʤ ʤ ʓ Ş ϴʤ ʜ ʠ ʜ ϴ ʦ ɚ ʤ ʙ ɪ ʜ ʝ ɫ ʧ ʦ ʤ ʤ ʦ ɱ ʃ ʴ ʸ ʧ ʦ ʤ ʝ ʰ ϴ ʴ ɱ ʧ ɚ ʦ ʧ ʝ ʦ ϴ ɫ ʠ ɚ ʤ ʤ ʸ ʧ ϴ ʤ ʒ ʷ ɫ ʴ. ɨ ʦ ɱ ʤ ʵ ɫ ʦ ɠ ʦ ʤ ʦ ʙ ʓ ʦ ʜ ʠ ʤ ʦ ʟ ϴ ʃ ɪ ɱ Ş ϴ ʴ ʟ ϴ ʃ ɪ ʰ ʝ ʤ ʤ ʝ ɮ ʦ ʜ Eclat.

ʃ ʝ ɮ ʦ ʜ FPG (Frequent Pattern Growth, ɚ ʳ ʦ ϴ ʠ ɚ ϴʤ ʠ ʝ ʯ ϴ ɱ ʦ ɚ ɱ ʦ ʝ ʯ ϴ ʰ ʠ ʓ ɱ ʤ ϴ ʙ ʦ ʦ ʦ ɚ) [5ï7] ϴʤ ϴʤ ʦ ɠ ʠ ʯ ʤ ʤ ʤ ʝ ɮ ʦ ʜ ɪ Eclat ʠ ɱ ʧ ʦ ʤ ʟ ɪ ʝ ɫ ʧ ʦ ʦ ʓ ʦ ʜ ʧ ʦ ʙ ϴ ʝ ɚ ɠ ʤ ʤ ʙ ʠ ʤ ʤ. ʃ ʝ ɮ ʦ ʜ ʧ ʦ ʟ ɚ ʦ ʤ ʝ ɫ ʠ ʟ ʙ ʝ ɣ ϴ ʴ ʧ ʦ ʦ ʯ ʝ ʜ ɪ ʦ ɕ ɠ ʝ ʤ ʝ ʦ ϴ ʯ ʠ ʠ ʧ ʦ ɫ ʝ ʤ ɥ ʠ ϴʤ ʤ ʓ ʯ ϴ ɱ ʦ ɚ ɱ ʦ ʝ ʯ ϴ ʰ ʠ ʓ ɱ ʤ ϴ ʙ ʦ ʦ ʦ ɚ, [illegible] D (1).

[illegible] FPG [illegible] D (1) [illegible]

[illegible] FPG [illegible]

[illegible]

[illegible]

[illegible]

[illegible] t-[illegible] [6, 7];

[illegible] $\mathrm{supp}(X)$ [illegible] X [illegible] tid_j [illegible] T_j, [illegible] D [3, 4, 7];

[illegible] D (1) [illegible] X, [illegible] τ_a, [illegible] $\tau_a \in I$ [illegible]

[illegible] 1 (k [illegible]).

[illegible] 1

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Apriori	[illegible]	[illegible]	[illegible]	k
AprioriTid	[illegible]	[illegible]	[illegible]	1

Apriori Hybrid	[illegible]	[illegible]	[illegible]	*k*
DHP	[illegible]	[illegible]	[illegible]	1
Partition	[illegible]	[illegible]	[illegible]	*k*
Eclat	[illegible]	[illegible]	[illegible]	1
Hybrid	[illegible]	[illegible] / [illegible]	[illegible] / [illegible]	*k*
FPG	[illegible]	[illegible]	[illegible]	1

[illegible] [3, 6, 7, 14]:

– [illegible];

– [illegible] *D* [illegible];

– [illegible];

– [illegible];

– [illegible].

[illegible]

[illegible]

[illegible]

[illegible]

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