C = *present_count*
C′ = *previous_count*

D = old database
D′ = new database

δ = ceil (*min_sup* x |*D*|)
δ'' = ceil (*min_sup* x |*D′*|)

$S_P^{db} = C(v_{s2}) - C'(v_{s2}) + C(w_s) - C'(w_s)$ [additional support occurred due to *IncDB*]

$total\_sup_P^U (T_P^U) = \sum C(U) = \sum C(X);\ \{X \mid X \in N_P^U\} = C(u_s) + C(v_{s1})$
[unmodified nodes' total support]

$total\_sup_P^M (T_P^M) = \sum C(M) = \sum C(X);\ \{X \mid X \in N_P^M\} = C(v_{s2}) + C(w_s)$
[modified nodes' total support]

$S_P^D = C(u_s) + C(v_{s1}) + C'(v_{s2}) + C'(w_s)$ [previous support/ Support in *D*]

$total\_sup\ (S^{D'}) = C(u_s) + C(v_{s1}) + C(v_{s2}) + C(w_s) = T_P^U + T_P^M = S_P^D + S_P^{db}$
[new support/updated support in *D′*]

$heuristic\_support_P(H_P) = C(u) + C(v) + C(w)$
[Heuristic Support:First level nodes reached through next link traversals]
$= heuristic\_support_P^{unmodified}(H_P^U) + heuristic\_support_P^{modified}(H_P^M)$

$N_P^U = \{u_s, v_{s1}\}$ = projection from unmodified (U) nodes
$N_P^M = \{v_{s2}, w_s\}$ = projection from modified (M) nodes

Complete Projection, $N_P = \{u_s, v_{s1}, v_{s2}, w_s\} = N_P^M \cup N_P^U$

(a)

$S_P^{db} = \sum C(M) - C'(M)$

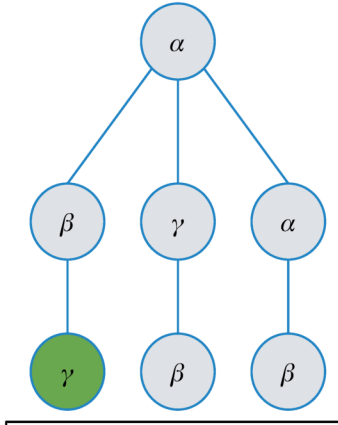
$S_P^D = \sum C'(M) + \sum C(U)$

$S_P^{D'} = \sum C(M) + \sum C(U)$

$(S_P^{db})^+ = \sum_{P'} C(M);\ P' \to P$

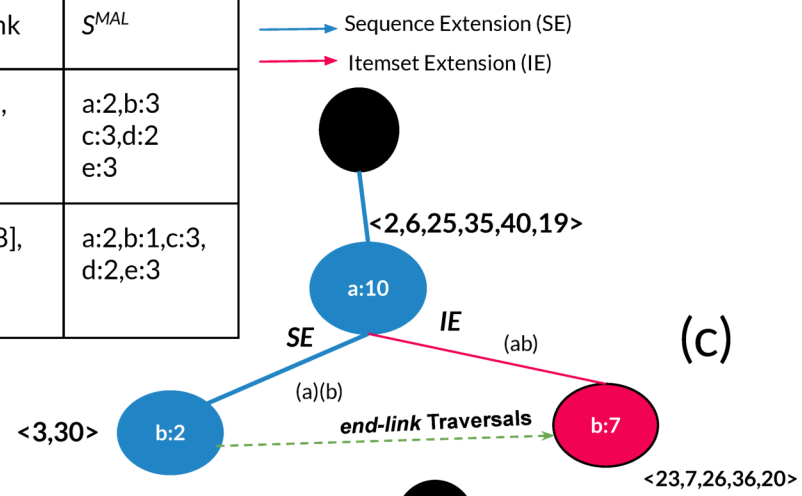
node	next link	modified next link	S^{MAL}
6	a:[11, 29], b:[7], c:[8,12], d:[9,13], e:[10, 28, 14]	a:[29],b:[7], c:[8], e:[28]	a:2,b:3 c:3,d:2 e:3
7	a:[11, 29], b:[30], C:[8,12], d:[9,13] e:[10, 28, 14]	a:[29], b:[30],c:[8], e:[28]	a:2,b:1,c:3, d:2,e:3

(b)

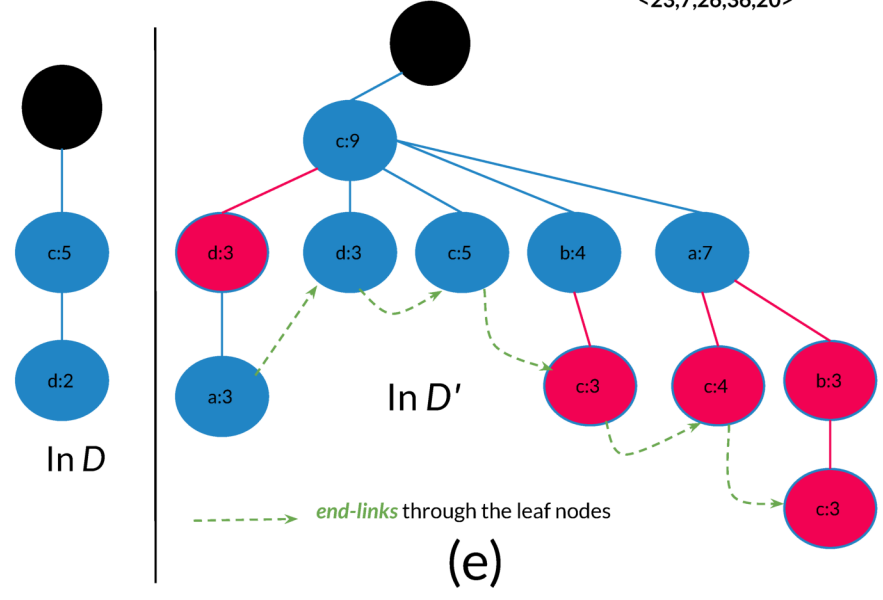


(d)

Suppose, *αβγ* satisfied the infrequent to frequent transition property.
To get complete idea for *αβγ*, we need to perform complete projection (*α* -> *αβ* -> *αβγ*) on fly.
next_link helps in this regard.



(c)



(e)