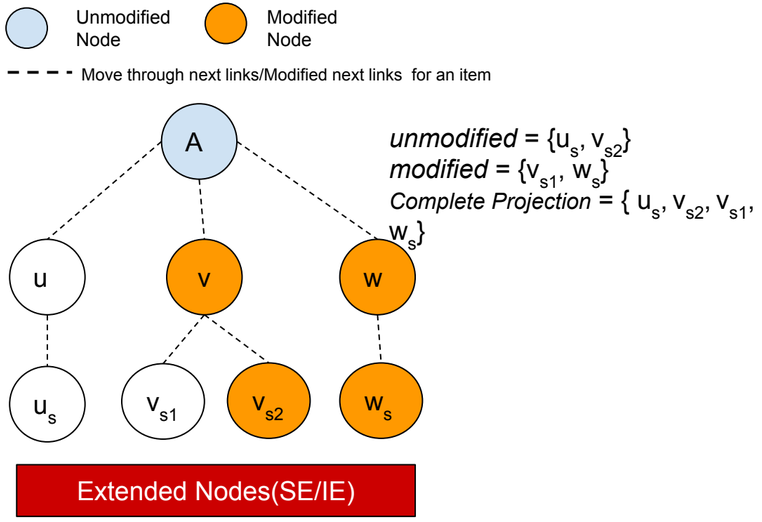

unmodified = $\{u_s, v_{s2}\}$
modified = $\{v_{s1}, w_s\}$
Complete Projection = $\{ u_s, v_{s2}, v_{s1}, w_s\}$

add_sup=v_{s2}.(present_count-previous_count)+w_s.(present_count-previous_count)
$total\_sup_u$ = u_s.present_count+v_{s1}.present_count
$total\_sup_m$ = v_{s2}.present_count+w_s.present_count
previous_sup = $\mathbf{u_s}$.present_count+$\mathbf{v_{s1}}$.present_count+$\mathbf{v_{s2}}$.previous_count+$\mathbf{w_s}$.previous_count

total_sup = u_s.present_count+v_{s1}.present_count+v_{s2}.present_count+w_s.present_count
= $total\_sup_u$ + $total\_sup_m$
= *previous_sup* + *add_sup* = *inc_sup*

heuristic_sup = u.present_count+v.present_count+w.present_count
[First level nodes reached through next link traversal]
= $heuristic\_sup_{unmodified}$ + $heuristic\_sup_{modified}$

(a)

Function Name	Input	Output	Goal
SE_Incremental	***nodes***: A set of modified nodes (which project *P*) from which *extension* will be performed. **Item**: Extension will be performed for *item(P->P{i})*. **δ**:current minimum support (**δ**=min_sup x |D'|) ***pass***:current pass no. ***curr_sup***: current stored support of *P{i}* in BPFSP-Tree(Frequent/sequence extend NIB(SENIB).	***inc_sup***:***curr_sup***+***add_sup***(breadth-first support counting may not calculate completely, if can detect infrequent early, ***flag*** will be set to **False**). $heuristic\_sup_m$:∑**v**.present_count , { **v** ∈ first set of modified nodes reached through **modifed_next_link**}. ***modified***: A set of modified nodes ***N*** which will perform extension. ***new_created***: {***n*** | ***n*** ∈ **modified** and created in current ***pass*** }. ***flag***:If complete projection is done (breadth-first support technique can prune early) then it is set to **True** and returned support can be stored in concerned **NIB** or will be frequent. $total\_sup_m$: $\sum_{n \in modified}$ ***n***.present_count	Tracking the modified nodes for SE with parameters (***P->P{i}***). Traversing will be performed through **modified_next_link**(Implicit Tracking of the Incremental DB(**Inc DB**).
SE_Unmodified	***nodes***:Complete set of nodes which project *P*. **Item**: [similar def.](*P->P{i}*). **δ**: [similar def.] ***pass***: [similar def.] ***curr_max_sup***: current stored support of *P* in BPFSP-Tree(Frequent).	$heuristic\_sup_u$:∑**v**.present_count , { **v** ∈ first set of unmodified nodes reached through **next_link**}. $total\_sup_u$::$\sum_{n \in unmodified}$ **n**.present_count ***unmodified***: A set of unmodified nodes ***N*** which will perform extension. ***flag***: [similar def.]	Tracking the unmodified nodes for SE with parameters (***P->P{i}***). Traversing will be performed through next_link to discover the unmodified nodes.
IE_Incremental	***nodes***: similar ***nodes*** def. as SE_Incremental. ***item***: Extension will be performed for *item(P->Pi)*. **δ**: [similar def.] ***pass***: [similar def.] ***last_ev_bits***: last event of *P*'s bitset representation of items. ***curr_sup***: current stored support of *Pi,* in BPFSP-Tree(Frequent/itemset extend NIB(IENIB).	***inc_sup***: [similar def.] but result will be calculated for IE. **modified**: [similar def.] but these nodes will perform IE. ***new_created***:[similar def.] but these nodes will perform IE. ***flag***:[similar def.] $total\_sup_m$:[similar def.]	Tracking the modified nodes for IE with parameters (***P->Pi***). Traversing will be performed through **modified_next_link**(Implicit Tracking of the Incremental DB(**Inc DB**).
IE_Unmodified	***nodes***: Complete set of nodes which project *P*. ***item***: Extension will be performed for *item(P->Pi)*. **δ**: [similar def.] ***pass***: [similar def.] ***last_ev_bits***:[similar def.] ***curr_max_sup***: [similar def.]	$total\_sup_u$::$\sum_{n \in unmodified}$ **n**.present_count ***unmodified***: A set of unmodified nodes ***N*** which will perform extension. ***flag***: [similar def.]	Tracking the unmodified nodes for IE with parameters (***P->Pi***). Traversing will be performed through next_link to discover the unmodified nodes.

(b)