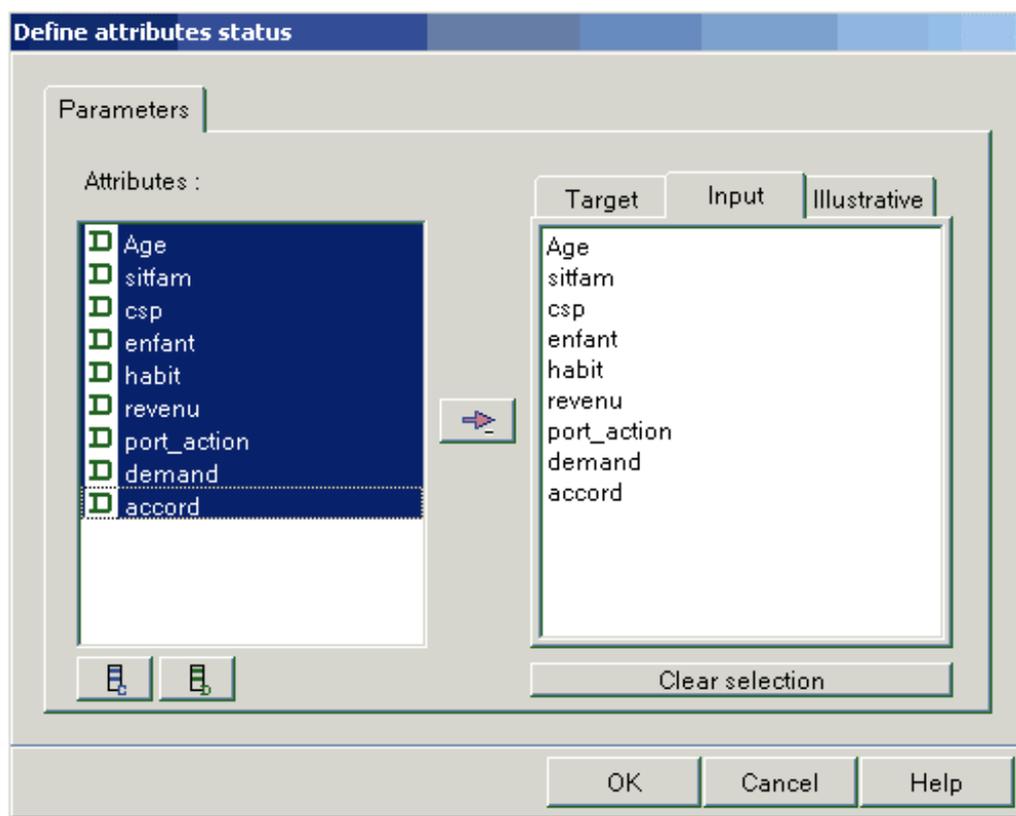# Subject

Build association rule from tabular dataset (examples x attributes). Evaluate the influence of SUPPORT_MIN and CONFIANCE_MIN parameters on the number and the quality of produced rules.
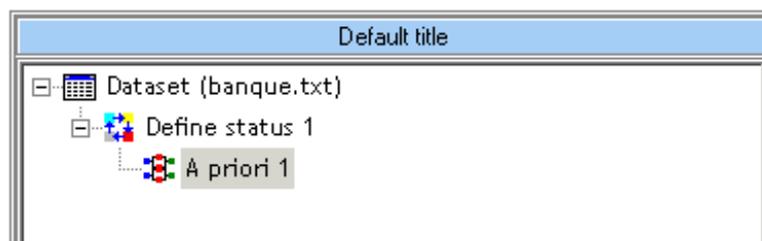
Dataset

BANQUE.BDM, there are bank customers which request a consumer credit. All attributes are the same weight.

Build association rule with TANAGRA

1. Load BANQUE.BDM
2. Insert « Define Status » component, define all attributes as INPUT. **Only discrete attributes can be used for association rule, if you have continuous attributes, you must discretize them.**

3. Insert A PRIORI component in the diagram.

4. You can rule the diagram, default parameters are :
   - SUPPORT_MIN = 0.33
   - CONFIANCE_MIN = 0.75
   - MAX_CARD_ITEMSETS = 4 (only itemsets with CARD lower than or equal to 4 are built)
   - LIFT : LIFT minima of rules showed.

   The first three parameters allow reducing computation time. The forth allows only the limitation of showed rules.

The rules are listed in a table, sorted in decreasing order by LIFT criterion, other rule evaluation measure are available.

A priori 1				
Parameters				

A-Priori parameters

Support min	0.33
Confidence min	0.75
Max rule length	4
Lift filtering	1.10

Results				

ITEMS

Counting items

All items	25
Filtered items	13

Counting itemsets

card(itemset) = 2	24
card(itemset) = 3	15
card(itemset) = 4	2

RULES

Number of rules : 8

Antecedent	Consequent	Lift	Support	Confidence
"habit=locataire" - "csp=cadre_moyen" - "port_action=oui"	"accord=oui"	1.192	0.343	0.861
"habit=locataire" - "port_action=oui"	"accord=oui"	1.191	0.404	0.860
"Age=ancien"	"habit=locataire" - "csp=cadre_moyen"	1.161	0.348	0.932
"port_action=oui"	"accord=oui"	1.152	0.449	0.832
"csp=cadre_moyen" - "port_action=oui"	"accord=oui"	1.151	0.374	0.831
"csp=cadre_moyen" - "port_action=oui"	"habit=locataire" - "accord=oui"	1.146	0.343	0.764
"Age=ancien"	"csp=cadre_moyen"	1.111	0.359	0.959
"habit=locataire" - "Age=ancien"	"csp=cadre_moyen"	1.110	0.348	0.958

Execution time : 10 ms.
Created at 07/04/2004 22:51:36

Other information are also available :
- Number of items;
- Number of items with support higher than SUPPORT_MIN;
- Number of itemsets with cardinal =2, 3, …

To modify some parameters

With the default parameters, we get 8 rules; LIFT of rules is a little disappointing. Let we set less restrictive parameters, we will get more rules, perhaps some of them are more informative? Set SUPPORT_MIN to 0.25

We get 30 rules. The best rules have a LIFT close to 2, these rules can be associated to the particular situation of the single people.

A priori 1
Parameters

A-Priori parameters

Support min	0.25
Confidence min	0.75
Max rule length	4
Lift filtering	1.10

Results

ITEMS

Counting items

All items	25
Filtered items	15

Counting itemsets

card(itemset) = 2	45
card(itemset) = 3	42
card(itemset) = 4	7

RULES

Number of rules : 30				
Antecedent	Consequent	Lift	Support	Confidence
"sitfam=celibataire"	"habit=locataire" - "csp=cadre_moyen" - "enfant=zero"	1.968	0.268	0.855
"sitfam=celibataire"	"csp=cadre_moyen" - "enfant=zero"	1.889	0.278	0.887
"habit=locataire" - "sitfam=celibataire"	"csp=cadre_moyen" - "enfant=zero"	1.881	0.268	0.883
"sitfam=celibataire"	"habit=locataire" - "enfant=zero"	1.844	0.283	0.903
"csp=cadre_moyen" - "sitfam=celibataire"	"habit=locataire" - "enfant=zero"	1.834	0.268	0.898
"sitfam=celibataire"	"enfant=zero"	1.731	0.293	0.935
"habit=locataire" - "sitfam=celibataire"	"enfant=zero"	1.727	0.283	0.933
"csp=cadre_moyen" - "sitfam=celibataire"	"enfant=zero"	1.725	0.278	0.932
"habit=locataire" - "csp=cadre_moyen" - "sitfam=celibataire"	"enfant=zero"	1.721	0.268	0.930
"enfant=inf_a_2"	"sitfam=marie"	1.344	0.278	0.753
"demand=voiture"	"habit=locataire" - "accord=oui"	1.250	0.278	0.833