

Aprori Algorithm Example

ID	Products
T1	A,B
T2	B,D
T3	B,C
T4	A,B,D
T5	A,C
T6	B,C
T7	A,C
T8	A,B,C,E
T9	A,B,C

MIN SUPPORT =2 MIN CONFIDANCE =50%

Calculate the support product

item	support
A	6
B	7
C	6
D	2
E	1

E is removed its support value is less than min support value

item	support
A	6
B	7
C	6
D	2

Calculate the support product pair {A,B,C,D}

AB,AC,AD,BC,BD,CD

Item	Support
AB	4
AC	4
AD	1
BC	4
BD	2
CD	0

Item	Support
AB	4
AC	4
BC	4
BD	2

Calculate the support product subset {A,B,C,D}

ABC

BCD

ACD

ABD

Items	Support
ABC	2
BCD	0
ACD	0
ABD	1

Items	Support
ABC	2

Frequent item set is { A,B,C}

Association Rules for the frequent subset

subset is {A,B,C}

$A \wedge B \rightarrow C \mid B \wedge C \rightarrow A \mid A \wedge C \rightarrow B \mid A \rightarrow B \wedge C \mid B \rightarrow A \wedge C \mid C \rightarrow A \wedge B$

Rules	Support	Confidence
$A \wedge B \rightarrow C$	2	$\text{Sup}(A \wedge B \rightarrow C) / \text{sup}(A \wedge B) = 2/4 = 0.5 = 50\%$
$B \wedge C \rightarrow A$	2	$\text{Sup}(B \wedge C \rightarrow A) / \text{sup}(B \wedge C) = 2/4 = 0.5 = 50\%$
$A \wedge C \rightarrow B$	2	$\text{Sup}(A \wedge C \rightarrow B) / \text{sup}(A \wedge C) = 2/4 = 0.5 = 50\%$
$A \rightarrow B \wedge C$	2	$\text{Sup}(A \rightarrow B \wedge C) / \text{sup}(A) = 2/6 = 0.33 = 33\%$
$B \rightarrow A \wedge C$	2	$\text{Sup}(B \rightarrow A \wedge C) / \text{sup}(B) = 2/7 = 0.28 = 28\%$
$C \rightarrow A \wedge B$	2	$\text{Sup}(C \rightarrow A \wedge B) / \text{sup}(C) = 2/6 = 0.33 = 33\%$

- This rules satisfies the min confidence criteria and can be considered as the **Strongest Association Rules**

$A \wedge B \rightarrow C$	2	$\text{Sup}(A \wedge B \rightarrow C) / \text{sup}(A \wedge B) = 2/4 = 0.5 = 50\%$
$B \wedge C \rightarrow A$	2	$\text{Sup}(B \wedge C \rightarrow A) / \text{sup}(B \wedge C) = 2/4 = 0.5 = 50\%$
$A \wedge C \rightarrow B$	2	$\text{Sup}(A \wedge C \rightarrow B) / \text{sup}(A \wedge C) = 2/4 = 0.5 = 50\%$