

# یادگیری ماشین

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## (Association Rule)

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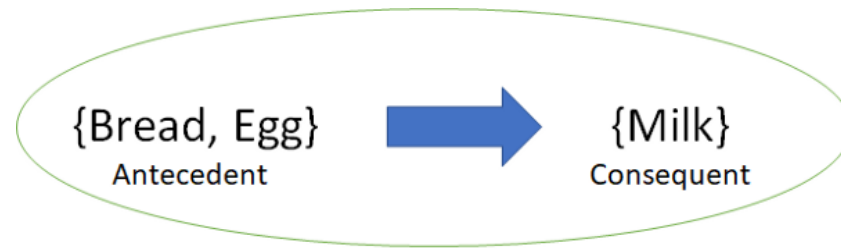
# آنچه در این جلسه یاد خواهیم گرفت:

۱. بررسی Association Rule

۲. بررسی کاربردهای مختلف Association Rule























۳. پیاده سازی

# Association Rule



Itemset = {Bread, Egg, Milk}























# SUPPORT

Transaction 1	   
Transaction 2	  
Transaction 3	 
Transaction 4	 
Transaction 5	   
Transaction 6	  
Transaction 7	 
Transaction 8	 

$$\text{Support}(\{X\} \rightarrow \{Y\}) = \frac{\text{Transactions containing both } X \text{ and } Y}{\text{Total number of transactions}}$$

$$\text{Support} \{ \text{apple} \} = \frac{4}{8}$$

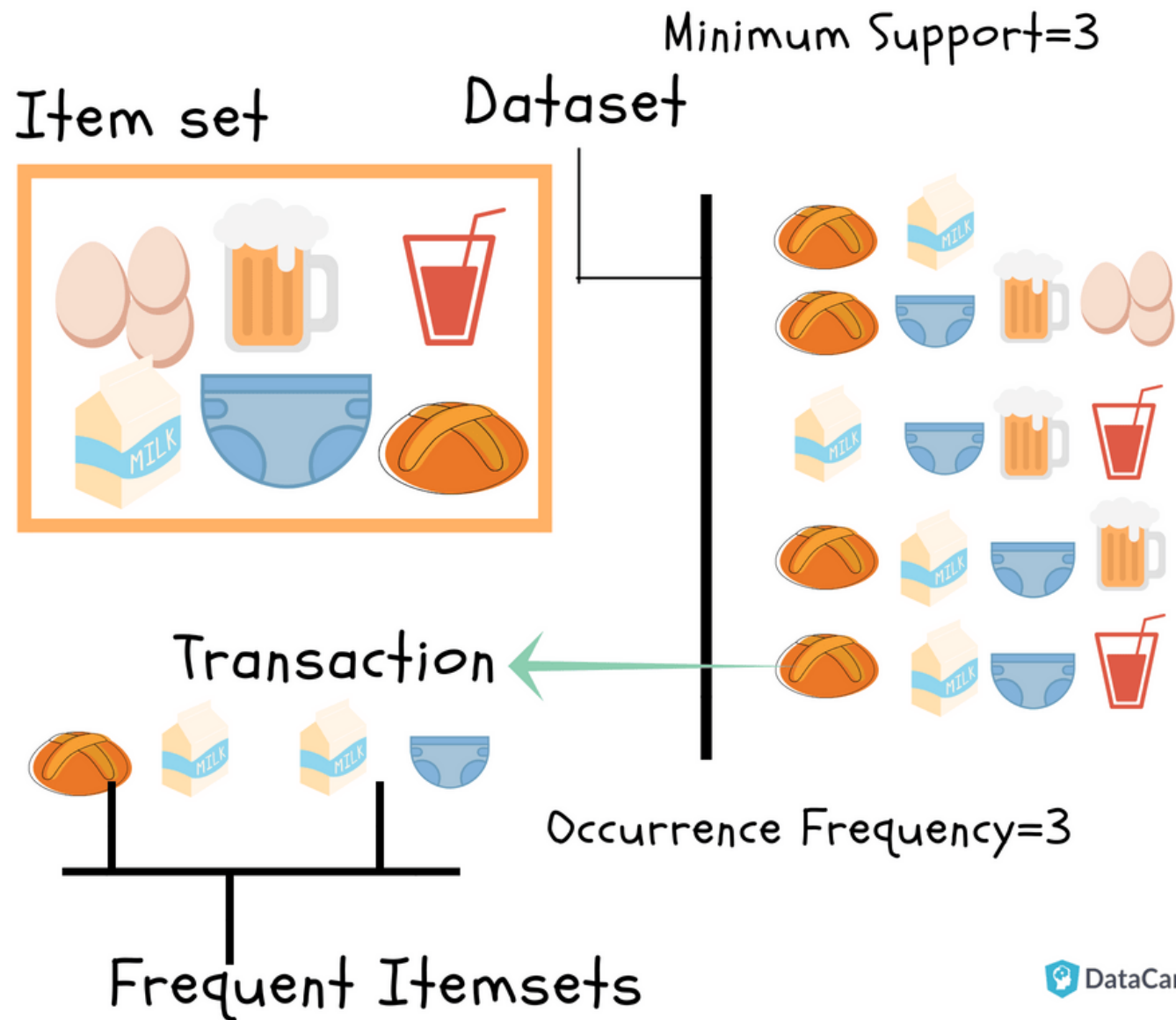
# Confidence(probability)

Transaction 1	   
Transaction 2	  
Transaction 3	 
Transaction 4	 
Transaction 5	   
Transaction 6	  
Transaction 7	 
Transaction 8	 

$$\text{Confidence}(\{X\} \rightarrow \{Y\}) = \frac{\text{Transactions containing both } X \text{ and } Y}{\text{Transactions containing } X}$$

$$\text{Confidence} \{ \text{apple} \rightarrow \text{beer} \} = \frac{\text{Support} \{ \text{apple}, \text{beer} \}}{\text{Support} \{ \text{apple} \}}$$

# Association Rule



# Association Rule

*Rule:  $X \Rightarrow Y$*

$Support = \frac{freq(X, Y)}{N}$

$Confidence = \frac{freq(X, Y)}{freq(X)}$

$Lift = \frac{Support}{Supp(X) \times Supp(Y)}$

**#DONTFORGETUS**

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