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| **Algorithm 1: Apriori Algorithm** | | | |
|  | **Input:** Dataset  **Output:** Large itemsets | | |
| **1** | L1 = {large 1-itemsets}; | | |
| **2** | **for**(k=2; Lk-1≠Φ; k++) | | |
| **3** |  | Ck = apriori\_gen(Lk-1); | |
| **4** |  | **forall** transaction t ∈ D do | |
| **5** |  |  | Ct = subset(Ck, t); |
| **6** |  |  | **forall** candidate c ∈ Ct do |
| **7** |  |  | c.count++; |
| **8** |  | Lk = { c ∈ Ck | c.count ≥ min\_sup }; | |
| **9** |  | **end** | |
| **10** | **end** | | |
| **11** | Answer = ∪k Lk; | | |

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| **Algorithm 2: K-Means Algorithm** | | | |
|  | **Input:** k (the number of clusters)  Data which was transformed into vectors  **Output:** Set of desired clusters | | |
| **1** | Specify the number k of clusters to assign. | | |
| **2** | Randomly initialize k centroids. | | |
| **3** | **repeat** | | |
| **4** |  | **for** each datapoint do | |
| **5** |  |  | Assign point to closest centroid |
| **6** |  |  | Recalculate centroid as mean over all points assigned. |
| **7** |  | **end for** | |
| **8** | **until convergence** | | |

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| **Algorithm 3: Fuzzy C-Means Algorithm** | | | |
|  | **Input:** k (the number of clusters)  Data which was transformed into vectors  **Output:** Set of desired clusters | | |
| **1** | Fix k, 2 < k < n; | | |
| **2** | Fix e, (e.g., e = 0.001); | | |
| **3** | Fix MaxIterations; | | |
| **4** | Choose any inner product norm metric (e.g., Euclidean distance); | | |
| **5** | Fix m; 1 < m < ∞ | | |
| **6** | Randomly initialize Vo = v1, v2, …., vc cluster centers; | | |
| **7** | **for** t = 1 to MaxIterations do | | |
| **8** |  | Update the membership matrix U; | |
| **9** |  | Calculate the new cluster centers Vt; | |
| **10** |  | Calculate the new objective function Jmt; | |
| **11** |  | **if** (abs(Jmt - Jmt-1 ) < e) **then** | |
| **12** |  |  | **break**; |
| **13** |  | **else** | |
| **14** |  |  | Jmt-1 = Jmt; |
| **15** |  | **end if** | |
| **16** | **end for** | | |
| **18** | **end** | | |