**DSBA/MBAD 6201 Assignment 5: Association Rule Mining**

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**June 18, 2015**

Please use the Apriori Algorithm to find all frequent item sets and association rules with

Minimum Support Count = 3 and Minimum Confidence 40%.

Table T

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TID | Item list | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 100 | 1 2 3 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 200 | 2 3 5 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
| 300 | 1 2 5 7 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| 400 | 3 4 7 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 500 | 2 3 6 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| 600 | 1 3 7 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 700 | 2 5 7 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 800 | 1 2 4 5 6 | 1 | 1 | 0 | 1 | 1 | 1 | 0 |
| 900 | 2 6 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 1000 | 1 2 5 7 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| 1100 | 4 5 7 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| 1200 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |

Table C1

|  |  |
| --- | --- |
| itemset | count |
| {1} | 5 |
| {2} | 8 |
| {3} | 6 |
| {4} | 3 |
| {5} | 6 |
| {6} | 3 |
| {7} | 6 |

Table F1

|  |  |
| --- | --- |
| itemset | count |
| {1} | 5 |
| {2} | 8 |
| {3} | 6 |
| {4} | 3 |
| {5} | 6 |
| {6} | 3 |
| {7} | 6 |

Table C2

|  |  |
| --- | --- |
| itemset | count |
| {1, 2} | 4 |
| {1, 3} | 2 |
| {1, 4} | 1 |
| {1, 5} | 3 |
| {1, 6} | 1 |
| {1, 7} | 3 |
| {2, 3} | 3 |
| {2, 4} | 1 |
| {2, 5} | 5 |
| {2, 6} | 3 |
| {2, 7} | 3 |
| {3, 4} | 1 |
| {3, 5} | 1 |
| {3, 6} | 1 |
| {3, 7} | 2 |
| {4, 5} | 2 |
| {4, 6} | 1 |
| {4, 7} | 2 |
| {5, 6} | 1 |
| {5, 7} | 4 |
| {6, 7} | 0 |

Table F2

|  |  |
| --- | --- |
| itemset | count |
| {1, 2} | 4 |
| {1, 5} | 3 |
| {1, 7} | 3 |
| {2, 3} | 3 |
| {2, 5} | 5 |
| {2, 6} | 3 |
| {2, 7} | 3 |
| {5, 7} | 4 |

Table C3

|  |  |
| --- | --- |
| itemset | count |
| {1, 2, 3} | 1 |
| {1, 2, 5} | 3 |
| {1, 2, 7} | 2 |
| {2, 5, 7} | 3 |

Table F3

|  |  |
| --- | --- |
| itemset | count |
| {1, 2, 5} | 3 |
| {2, 5, 7} | 3 |

Table C4

|  |  |
| --- | --- |
| itemset | count |
| {1, 2, 5, 7} | 2 |

Table F4

|  |  |
| --- | --- |
| itemset | count |
| none |  |

Table Candidate Rules

|  |  |  |  |
| --- | --- | --- | --- |
| rule | *X*∪*Y*  .count | *X*.count | conf |
| 1 → 2 | 4 | 5 | 0.80 |
| 1 → 5 | 3 | 5 | 0.60 |
| 1 → 7 | 3 | 5 | 0.60 |
| 2 → 3 | 3 | 8 | 0.38 |
| 2 → 5 | 5 | 8 | 0.63 |
| 2 → 6 | 3 | 8 | 0.38 |
| 2 → 7 | 3 | 8 | 0.38 |
| 5 →7 | 4 | 6 | 0.67 |
| 2 → 1 | 4 | 8 | 0.50 |
| 5 → 1 | 3 | 6 | 0.50 |
| 7 → 1 | 3 | 6 | 0.50 |
| 3 → 2 | 3 | 6 | 0.50 |
| 5 → 2 | 5 | 6 | 0.83 |
| 6 → 2 | 3 | 3 | 1.00 |
| 7 → 2 | 3 | 6 | 0.50 |
| 7 → 5 | 4 | 6 | 0.67 |
| 1 → {2, 5} | 3 | 5 | 0.60 |
| 2 → {1, 5} | 3 | 8 | 0.38 |
| 5 → {1, 2} | 3 | 6 | 0.50 |
| {2, 5} → 1 | 3 | 5 | 0.60 |
| {1, 5} → 2 | 3 | 3 | 1.00 |
| {1, 2} → 5 | 3 | 4 | 0.75 |
| 2 → {5, 7} | 3 | 8 | 0.38 |
| 5 → {2, 7} | 3 | 6 | 0.50 |
| 7 → {2, 5} | 3 | 6 | 0.50 |
| {5, 7} → 2 | 3 | 4 | 0.75 |
| {2, 7} → 5 | 3 | 3 | 1 |
| {2, 5} → 7 | 3 | 5 | 0.60 |

Table Final Association Rules

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| rule | *X*∪*Y*  .count | *X*  .count | conf | lift |
| 1 → 2 | 4 | 5 | 0.80 | 1.20 |
| 1 → 5 | 3 | 5 | 0.60 | 1.20 |
| 1 → 7 | 3 | 5 | 0.60 | 1.20 |
| 2 → 5 | 5 | 8 | 0.63 | 1.26 |
| 5 →7 | 4 | 6 | 0.67 | 1.34 |
| 2 → 1 | 4 | 8 | 0.50 | 1.20 |
| 5 → 1 | 3 | 6 | 0.50 | 1.20 |
| 7 → 1 | 3 | 6 | 0.50 | 1.20 |
| 3 → 2 | 3 | 6 | 0.50 | 0.75 |
| 5 → 2 | 5 | 6 | 0.83 | 1.25 |
| 6 → 2 | 3 | 3 | 1.00 | 1.50 |
| 7 → 2 | 3 | 6 | 0.50 | 0.75 |
| 7 → 5 | 4 | 6 | 0.67 | 1.34 |
| 1 → {2, 5} | 3 | 5 | 0.60 | 1.44 |
| 5 → {1, 2} | 3 | 6 | 0.50 | 1.50 |
| {2, 5} → 1 | 3 | 5 | 0.60 | 1.44 |
| {1, 5} → 2 | 3 | 3 | 1.00 | 1.50 |
| {1, 2} → 5 | 3 | 4 | 0.75 | 1.50 |
| 5 → {2, 7} | 3 | 6 | 0.50 | 1.00 |
| 7 → {2, 5} | 3 | 6 | 0.50 | 1.20 |
| {5, 7} → 2 | 3 | 4 | 0.75 | 1.13 |
| {2, 7} → 5 | 3 | 3 | 1.00 | 2.40 |
| {2, 5} → 7 | 3 | 5 | 0.60 | 1.20 |