# Introduction to Data Mining
# Homework 5: Frequent Itemsets

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민두기

1 – (a)
Frequent item = {1}, {2}, {3}, {4}, {5}, {6}

1 – (b)
Frequent item pairs = {1,2}, {1,3}, {1,4}, {1,5}, {1,6}, {2,3}, {2,4}, {2,6}, {3,6}

2 – (a)
conf({3,5}->2) = 0

2 – (b)
conf({1,2,4}->8) = 2/5

2 – (c)
conf({2,4,5}->5) = 1

2 – (d)
conf({2,3}->6) = 1

3 – (a)
C_2 = {1,2}, {1,3}, {1,4}, {1,5}, {1,6}, {1,7}, {1,8}, {1,9}, {1,10}, {2,3}, {2,4}, {2,5}, {2,6}, {2,7}, {2,8}, {2,9}, {2,10}, {3,4}, {3,5}, {3,6}, {3,7}, {3,8}, {3,9}, {3,10}, {4,5}, {4,6}, {4,7}, {4,8}, {4,9}, {4,10}, {5,6}, {5,7}, {5,8}, {5,9}, {5,10}, {6,7}, {6,8}, {6,9}, {6,10}, {7,8}, {7,9}, {7,10}, {8,9}, {8,10}, {9,10}
L_2 = {1,2}, {1,3}, {1,4}, {1,5}, {1,6}, {1,7}, {1,8}, {1,9}, {1,10}, {2,3}, {2,4}, {2,5}, {2,6}, {2,8}, {2,10}, {3,6}, {3,9}, {4,8}, {5,10}

3 – (b)
k = 6

4 – (a)

| item | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| support | 4 | 6 | 8 | 8 | 6 | 4 |

Value of table means that support of item pair(i, j) is value.

| item | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 | | | | | | |
| 2 | 2 | | | | | |
| 3 | 3 | 3 | | | | |
| 4 | 2 | 4 | 4 | | | |
| 5 | 1 | 2 | 4 | 3 | | |
| 6 | 0 | 1 | 2 | 3 | 2 | |

4 – (b)

Value of table means that bucket index of item pair(i, j) is value.

| item | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 | | | | | | |
| 2 | 2 | | | | | |
| 3 | 3 | 6 | | | | |
| 4 | 4 | 8 | 1 | | | |
| 5 | 5 | 10 | 4 | 9 | | |
| 6 | 6 | 1 | 7 | 2 | 8 | |

4 – (c)

Frequent bucket = 1, 2, 4, 8

4 – (d)

If table value is 1, item pair(i, j) is counted on the second pass.

| item | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 | | | | | | |
| 2 | 1 | | | | | |
| 3 | 0 | 0 | | | | |
| 4 | 1 | 1 | 1 | | | |
| 5 | 0 | 0 | 1 | 0 | | |
| 6 | 0 | 1 | 0 | 1 | 1 | |