Test Case 1:

Input:

Assign_profs(5,10,5,5)

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5

FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele2 HDele3 HDele4 HDele5 HDele6
FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele3 HDele4 HDele5 HDele6
FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele4 HDele5 HDele6
FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele5 HDele6

Output:

{'x1': {'Prof 1': ['FDCDC1'], 'Prof 2': ['FDCDC7'], 'Prof 3': ['FDCDC7'], 'Prof 4': ['FDCDC8'], 'Prof 5': ['FDCDC8']}, 'x2': {'Prof 6': ['FDCDC9', 'FDCDC9'], 'Prof 7': ['FDCDC10', 'FDCDC10'], 'Prof 8': ['FDele6', 'FDele6'], 'Prof 9': ['FDele7', 'FDele7'], 'Prof 10': ['FDele8', 'FDele8'], 'Prof 11': ['FDele9', 'FDele9'], 'Prof 12': ['HDCDC1', 'HDCDC1'], 'Prof 13': ['HDCDC2', 'HDCDC2'], 'Prof 14': ['HDCDC3', 'HDCDC3'], 'Prof 15': ['HDCDC4', 'HDCDC4']}, 'x3': {'Prof 16': ['HDCDC5', 'HDCDC5', 'FDCDC1'], 'Prof 17': ['FDCDC2', 'FDCDC2', 'FDCDC3'], 'Prof 18': ['FDCDC3', 'FDCDC4', 'FDCDC4'], 'Prof 19': ['FDCDC5', 'FDCDC5', 'FDCDC6'], 'Prof 20': ['FDCDC6', '', '']}}
{'x1': {'Prof 1': ['FDCDC1'], 'Prof 2': ['FDCDC7'], 'Prof 3': ['FDCDC7'], 'Prof 4': ['FDCDC8'], 'Prof 5': ['FDCDC8']}, 'x2': {'Prof 6': ['FDCDC9', 'FDCDC9'], 'Prof 7': ['FDCDC10', 'FDCDC10'], 'Prof 8': ['HDCDC1', 'HDCDC1'], 'Prof 9': ['FDele8', 'FDele8'], 'Prof 10': ['HDCDC2', 'HDCDC2'], 'Prof 11': ['HDCDC3', 'HDCDC3'], 'Prof 12': ['HDCDC4', 'HDCDC4'], 'Prof 13': ['HDCDC5', 'HDCDC5'], 'Prof 14': ['HDele3', 'HDele3'], 'Prof 15': ['FDCDC1', 'FDCDC2']}, 'x3': {'Prof 16': ['FDCDC2', 'FDCDC3', 'FDCDC3'], 'Prof 17': ['FDCDC4', 'FDCDC4', 'FDCDC5'], 'Prof 18': ['FDCDC5', 'FDCDC6', 'FDCDC6'], 'Prof 19': ['', '', 'HDele5'], 'Prof 20': ['HDele5', 'HDele4', 'HDele4']}}
{'x1': {'Prof 1': ['FDCDC6'], 'Prof 2': ['FDCDC8'], 'Prof 3': ['FDCDC8'], 'Prof 4': ['FDCDC7'], 'Prof 5': ['FDCDC7']}, 'x2': {'Prof 6': ['FDCDC10', 'FDCDC10'], 'Prof 7': ['FDCDC9', 'FDCDC9'], 'Prof 8': ['FDele6', 'FDele6'], 'Prof 9': ['FDele7', 'FDele7'], 'Prof 10': ['HDCDC1', 'HDCDC1'], 'Prof 11': ['FDele9', 'FDele9'], 'Prof 12': ['FDele8', 'FDele8'], 'Prof 13': ['HDCDC2', 'HDCDC2'], 'Prof 14': ['HDCDC3', 'HDCDC3'], 'Prof 15': ['HDCDC4', 'HDCDC4']}, 'x3': {'Prof 16': ['HDCDC5', 'HDCDC5', ''], 'Prof 17': ['', 'FDCDC6', 'FDCDC4'], 'Prof 18': ['FDCDC4', 'FDCDC1', 'FDCDC1'], 'Prof 19': ['FDCDC2', 'FDCDC2', 'FDCDC5'], 'Prof 20': ['FDCDC5', 'FDCDC3', 'FDCDC3']}}
{'x1': {'Prof 1': ['FDele1'], 'Prof 2': ['FDele1'], 'Prof 3': ['HDCDC1'], 'Prof 4': ['HDCDC1'], 'Prof 5': ['FDCDC5']}, 'x2': {'Prof 6': ['FDCDC6', 'FDCDC6'], 'Prof 7': ['FDCDC7', 'FDCDC7'], 'Prof 8': ['FDele4', 'FDele4'], 'Prof 9': ['HDCDC2', 'HDCDC2'], 'Prof 10': ['HDCDC3', 'HDCDC3'], 'Prof 11': ['FDCDC2', 'FDCDC2'], 'Prof 12': ['FDCDC3', 'FDCDC3'], 'Prof 13': ['FDCDC1', 'FDCDC1'], 'Prof 14': ['FDCDC4', 'FDCDC4'], 'Prof 15': ['FDCDC5', 'FDCDC8']}, 'x3': {'Prof 16': ['FDCDC8', 'FDCDC9', 'FDCDC9'], 'Prof 17': ['FDCDC10', 'FDCDC10', 'HDCDC4'], 'Prof 18': ['HDCDC4', 'HDCDC5', 'HDCDC5'], 'Prof 19': ['', '', 'FDele6'], 'Prof 20': ['FDele6', 'HDele4', 'HDele4']}}
{'x1': {'Prof 1': ['FDCDC3'], 'Prof 2': ['FDCDC8'], 'Prof 3': ['FDCDC8'], 'Prof 4': ['FDCDC7'], 'Prof 5': ['FDCDC7']}, 'x2': {'Prof 6': ['FDCDC10', 'FDCDC10'], 'Prof 7': ['FDCDC9', 'FDCDC9'], 'Prof 8': ['FDele6', 'FDele6'], 'Prof 9': ['FDele9', 'FDele9'], 'Prof 10': ['FDele8', 'FDele8'], 'Prof 11': ['HDCDC1', 'HDCDC1'], 'Prof 12': ['FDele7', 'FDele7'], 'Prof 13': ['HDCDC2', 'HDCDC2'], 'Prof 14': ['HDCDC3', 'HDCDC3'], 'Prof 15': ['HDCDC5', 'HDCDC5']}, 'x3': {'Prof 16': ['HDCDC4', 'HDCDC4', 'FDCDC3'], 'Prof 17': ['FDCDC6', 'FDCDC6', 'FDCDC5'], 'Prof 18': ['FDCDC5', 'FDCDC4', 'FDCDC4'], 'Prof 19': ['', '', 'FDCDC1'], 'Prof 20': ['FDCDC1', 'FDCDC2', 'FDCDC2']}}

Test Case 2:

Input: assign_profs(10,10,10,10)

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5

FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele2 HDele3 HDele4 HDele5 HDele6

FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele3 HDele4 HDele5 HDele6
FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele4 HDele5 HDele6
FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele5 HDele6
FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele2 HDele3 HDele4 HDele5 HDele6
FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6
FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6
FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele2 HDele3 HDele4 HDele5 HDele6
FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6
FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5
FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4
FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele1 HDele2 HDele3 HDele4 HDele5 HDele6
FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDCDC10 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 FDele10 HDCDC2 HDCDC3 HDCDC4 HDCDC5 HDele3 HDele4 HDele5 HDele6
FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDCDC5 FDCDC6 FDCDC7 FDCDC8 FDCDC9 FDele1 FDele2 FDele3 FDele4 FDele5 FDele6 FDele7 FDele8 FDele9 HDCDC1 HDCDC2 HDCDC3 HDCDC4 HDele1 HDele2 HDele3 HDele4

Output:

{'x1': {'Prof 1': ['FDCDC1'], 'Prof 2': ['FDele1'], 'Prof 3': ['FDele1'], 'Prof 4': ['FDCDC7'], 'Prof 5': ['FDCDC7'], 'Prof 6': ['FDCDC8'], 'Prof 7': ['FDCDC8'], 'Prof 8': ['FDele9'], 'Prof 9': ['FDele8'], 'Prof 10': ['FDele6']}, 'x2': {'Prof 11': ['FDele7', 'FDele6'], 'Prof 12': ['', 'FDele7'], 'Prof 13': ['HDCDC1', 'HDCDC1'], 'Prof 14': ['HDCDC2', 'HDCDC2'], 'Prof 15': ['HDCDC5', ''], 'Prof 16': ['HDCDC4', 'HDCDC4'], 'Prof 17': ['FDCDC6', 'FDCDC6'], 'Prof 18': ['FDCDC5', 'FDCDC5'], 'Prof 19': ['FDCDC4', 'FDCDC4'], 'Prof 20': ['FDCDC3', 'FDCDC3']}, 'x3': {'Prof 21': ['FDCDC9', 'FDCDC9', 'FDCDC10'], 'Prof 22': ['FDCDC10', 'FDele3', 'FDele3'], 'Prof 23': ['FDele10', 'FDele10', 'FDele2'], 'Prof 24': ['FDele2', 'HDele4', 'HDele4'], 'Prof 25': ['HDele3', 'HDele3', 'HDele2'], 'Prof 26': ['FDele4', 'FDele4', 'FDele9'], 'Prof 27': ['HDCDC3', 'HDCDC3', 'HDCDC5'], 'Prof 28': ['FDCDC1', 'FDCDC2', 'FDCDC2'], 'Prof 29': ['HDele2', 'HDele5', 'HDele5'], 'Prof 30': ['FDele5', 'FDele5', 'FDele8']}}
{'x1': {'Prof 1': ['FDCDC1'], 'Prof 2': ['FDele1'], 'Prof 3': ['FDele1'], 'Prof 4': ['FDCDC7'], 'Prof 5': ['FDCDC7'], 'Prof 6': ['FDCDC8'], 'Prof 7': ['FDCDC8'], 'Prof 8': ['FDele2'], 'Prof 9': ['FDele5'], 'Prof 10': ['HDele1']}, 'x2': {'Prof 11': ['HDele2', 'FDele5'], 'Prof 12': ['', 'HDele2'], 'Prof 13': ['HDCDC1', 'HDCDC1'], 'Prof 14': ['HDCDC2', 'HDCDC2'], 'Prof 15': ['HDCDC3', 'HDCDC3'], 'Prof 16': ['HDCDC4', 'HDCDC4'], 'Prof 17': ['FDCDC6', 'FDCDC6'], 'Prof 18': ['FDCDC4', 'FDCDC4'], 'Prof 19': ['FDCDC3', 'FDCDC3'], 'Prof 20': ['FDCDC5', 'FDCDC5']}, 'x3': {'Prof 21': ['FDCDC9', 'FDCDC9', 'FDCDC10'], 'Prof 22': ['FDCDC10', 'FDele8', 'FDele8'], 'Prof 23': ['FDele4', 'FDele4', 'HDele6'], 'Prof 24': ['HDele6', 'FDele7', 'FDele7'], 'Prof 25': ['HDele3', 'HDele3', 'FDele6'], 'Prof 26': ['HDele1', 'FDele10', 'FDele10'], 'Prof 27': ['HDCDC5', 'HDCDC5', ''], 'Prof 28': ['FDCDC1', 'FDCDC2', 'FDCDC2'], 'Prof 29': ['FDele6', 'FDele9', 'FDele9'], 'Prof 30': ['FDele2', 'HDele4', 'HDele4']}}

{'x1': {'Prof 1': ['FDCDC6'], 'Prof 2': ['FDele1'], 'Prof 3': ['FDele1'], 'Prof 4': ['FDCDC9'], 'Prof 5': ['FDCDC9'], 'Prof 6': ['FDCDC8'], 'Prof 7': ['FDCDC8'], 'Prof 8': ['FDele3'], 'Prof 9': ['FDele7'], 'Prof 10': ['FDele7']}, 'x2': {'Prof 11': ['FDele8', 'FDele8'], 'Prof 12': ['FDele6', 'FDele6'], 'Prof 13': ['HDCDC1', 'HDCDC1'], 'Prof 14': ['FDCDC3', 'HDCDC5'], 'Prof 15': ['HDCDC3', 'HDCDC3'], 'Prof 16': ['HDCDC4', 'HDCDC4'], 'Prof 17': ['HDele2', 'HDele2'], 'Prof 18': ['HDele3', 'HDele3'], 'Prof 19': ['FDCDC1', 'FDCDC1'], 'Prof 20': ['FDCDC2', 'FDCDC2']}, 'x3': {'Prof 21': ['FDCDC7', 'FDCDC7', 'FDele9'], 'Prof 22': ['FDele9', '', ''], 'Prof 23': ['FDele5', 'FDele5', 'FDCDC10'], 'Prof 24': ['FDCDC10', 'FDele4', 'FDele4'], 'Prof 25': ['HDele5', 'HDele5', 'HDCDC2'], 'Prof 26': ['HDCDC5', 'FDele10', 'FDele10'], 'Prof 27': ['FDCDC4', 'FDCDC4', 'FDCDC3'], 'Prof 28': ['FDCDC6', 'FDCDC5', 'FDCDC5'], 'Prof 29': ['HDCDC2', 'HDele4', 'HDele4'], 'Prof 30': ['FDele2', 'FDele2', 'FDele3']}}
{'x1': {'Prof 1': ['FDCDC1'], 'Prof 2': ['FDele1'], 'Prof 3': ['FDele1'], 'Prof 4': ['FDCDC7'], 'Prof 5': ['FDCDC7'], 'Prof 6': ['FDCDC8'], 'Prof 7': ['FDCDC8'], 'Prof 8': ['FDele9'], 'Prof 9': ['FDele4'], 'Prof 10': ['FDele4']}, 'x2': {'Prof 11': ['', 'FDele7'], 'Prof 12': ['FDele7', 'HDele1'], 'Prof 13': ['HDCDC1', 'HDCDC1'], 'Prof 14': ['HDCDC2', 'HDCDC2'], 'Prof 15': ['HDCDC3', 'HDCDC3'], 'Prof 16': ['HDCDC4', 'HDCDC4'], 'Prof 17': ['FDCDC6', 'FDCDC6'], 'Prof 18': ['FDCDC4', 'FDCDC4'], 'Prof 19': ['FDCDC3', 'FDCDC3'], 'Prof 20': ['FDCDC5', 'FDCDC5']}, 'x3': {'Prof 21': ['FDCDC9', 'FDCDC9', 'FDCDC10'], 'Prof 22': ['FDCDC10', 'HDele2', 'HDele2'], 'Prof 23': ['HDele3', 'HDele3', 'HDele4'], 'Prof 24': ['HDele4', 'HDele6', 'HDele6'], 'Prof 25': ['FDele2', 'FDele2', 'FDele8'], 'Prof 26': ['HDele1', 'FDele3', 'FDele3'], 'Prof 27': ['HDCDC5', 'HDCDC5', ''], 'Prof 28': ['FDCDC1', 'FDCDC2', 'FDCDC2'], 'Prof 29': ['FDele8', 'FDele10', 'FDele10'], 'Prof 30': ['FDele6', 'FDele6', 'FDele9']}}
{'x1': {'Prof 1': ['FDCDC2'], 'Prof 2': ['FDele1'], 'Prof 3': ['FDele1'], 'Prof 4': ['HDCDC1'], 'Prof 5': ['HDCDC1'], 'Prof 6': ['FDCDC7'], 'Prof 7': ['FDCDC7'], 'Prof 8': ['FDele2'], 'Prof 9': ['FDele4'], 'Prof 10': ['FDele4']}, 'x2': {'Prof 11': ['FDele5', 'FDele5'], 'Prof 12': ['FDele6', 'FDele6'], 'Prof 13': ['FDele8', 'FDele8'], 'Prof 14': ['FDCDC3', 'FDCDC5'], 'Prof 15': ['HDCDC3', 'HDCDC3'], 'Prof 16': ['HDCDC5', 'HDCDC5'], 'Prof 17': ['HDele2', 'HDele2'], 'Prof 18': ['FDCDC6', 'FDCDC6'], 'Prof 19': ['HDele5', 'HDele5'], 'Prof 20': ['FDCDC4', 'FDCDC4']}, 'x3': {'Prof 21': ['FDCDC8', 'FDCDC8', 'FDCDC10'], 'Prof 22': ['FDCDC10', '', ''], 'Prof 23': ['FDCDC9', 'FDCDC9', 'HDCDC2'], 'Prof 24': ['HDCDC2', 'FDele3', 'FDele3'], 'Prof 25': ['FDele9', 'FDele9', 'HDele3'], 'Prof 26': ['FDele10', 'FDele10', 'FDCDC5'], 'Prof 27': ['HDCDC4', 'HDCDC4', 'FDCDC3'], 'Prof 28': ['FDCDC2', 'FDCDC1', 'FDCDC1'], 'Prof 29': ['HDele3', 'HDele4', 'HDele4'], 'Prof 30': ['FDele2', 'FDele7', 'FDele7']}}
{'x1': {'Prof 1': ['FDCDC1'], 'Prof 2': ['FDele1'], 'Prof 3': ['FDele1'], 'Prof 4': ['HDele1'], 'Prof 5': ['HDele1'], 'Prof 6': ['FDCDC7'], 'Prof 7': ['FDCDC7'], 'Prof 8': ['FDele2'], 'Prof 9': ['FDele3'], 'Prof 10': ['FDele6']}, 'x2': {'Prof 11': ['FDele10', 'FDele6'], 'Prof 12': ['', 'FDele10'], 'Prof 13': ['HDCDC1', 'HDCDC1'], 'Prof 14': ['HDCDC2', 'HDCDC2'], 'Prof 15': ['HDCDC3', 'HDCDC3'], 'Prof 16': ['HDCDC4', 'HDCDC4'], 'Prof 17': ['FDCDC6', 'FDCDC6'], 'Prof 18': ['FDCDC3', 'FDCDC3'], 'Prof 19': ['FDCDC4', 'FDCDC4'], 'Prof 20': ['FDCDC5', 'FDCDC5']}, 'x3': {'Prof 21': ['FDCDC8', 'FDCDC8', 'FDCDC9'], 'Prof 22': ['FDCDC9', 'FDCDC10', 'FDCDC10'], 'Prof 23': ['HDele2', 'HDele2', 'FDele9'], 'Prof 24': ['FDele9', 'FDele7', 'FDele7'], 'Prof 25': ['HDele6', 'HDele6', 'HDele4'], 'Prof 26': ['FDele3', 'FDele4', 'FDele4'], 'Prof 27': ['HDCDC5', 'HDCDC5', ''], 'Prof 28': ['FDCDC1', 'FDCDC2', 'FDCDC2'], 'Prof 29': ['HDele4', 'HDele5', 'HDele5'], 'Prof 30': ['FDele2', 'FDele5', 'FDele5']}}
{'x1': {'Prof 1': ['FDCDC5'], 'Prof 2': ['FDele1'], 'Prof 3': ['FDele1'], 'Prof 4': ['HDCDC1'], 'Prof 5': ['HDCDC1'], 'Prof 6': ['FDCDC8'], 'Prof 7': ['FDCDC8'], 'Prof 8': ['FDele7'], 'Prof 9': ['FDele3'], 'Prof 10': ['HDCDC3']}, 'x2': {'Prof 11': ['FDele5', 'FDele5'], 'Prof 12': ['HDele2', 'HDCDC3'], 'Prof 13': ['FDele9', 'FDele9'], 'Prof 14': ['HDCDC2', 'HDCDC2'], 'Prof 15': ['HDCDC5', 'HDCDC5'], 'Prof 16': ['FDCDC1', 'FDCDC1'], 'Prof 17': ['HDele5', 'HDele5'], 'Prof 18': ['HDele3', 'HDele3'], 'Prof 19': ['HDele4', 'HDele4'], 'Prof 20': ['', '']}, 'x3': {'Prof 21': ['FDCDC10', 'FDCDC10', 'FDCDC7'], 'Prof 22': ['FDCDC7', 'FDCDC9', 'FDCDC9'], 'Prof 23': ['FDele6', 'FDele6', 'HDCDC4'], 'Prof 24': ['HDCDC4', 'FDele10', 'FDele10'], 'Prof 25': ['FDCDC6', 'FDCDC6', 'FDCDC3'], 'Prof 26': ['FDele3', 'FDele4', 'FDele4'], 'Prof 27': ['FDCDC2', 'FDCDC2', 'HDele2'], 'Prof 28': ['FDCDC5', 'FDCDC4', 'FDCDC4'], 'Prof 29': ['FDCDC3', 'FDele8', 'FDele8'], 'Prof 30': ['FDele2', 'FDele2', 'FDele7']}}
{'x1': {'Prof 1': ['FDCDC1'], 'Prof 2': ['FDele1'], 'Prof 3': ['FDele1'], 'Prof 4': ['FDCDC7'], 'Prof 5': ['FDCDC7'], 'Prof 6': ['FDCDC8'], 'Prof 7': ['FDCDC8'], 'Prof 8': ['HDele3'], 'Prof 9': ['FDele7'], 'Prof 10': ['FDele5']}, 'x2': {'Prof 11': ['FDele10', 'FDele5'], 'Prof 12': ['', 'FDele10'], 'Prof 13': ['HDCDC1', 'HDCDC1'], 'Prof 14': ['HDCDC2', 'HDCDC2'], 'Prof 15': ['HDCDC3', 'HDCDC3'], 'Prof 16': ['HDCDC4', 'HDCDC4'], 'Prof 17': ['FDCDC4', 'FDCDC4'], 'Prof 18': ['FDCDC5', 'FDCDC5'], 'Prof 19': ['FDCDC3', 'FDCDC3'], 'Prof 20': ['FDCDC6', 'FDCDC6']}, 'x3': {'Prof 21': ['FDCDC9', 'FDCDC9', 'FDCDC10'], 'Prof 22': ['FDCDC10', 'FDele8', 'FDele8'], 'Prof 23': ['HDele5', 'HDele5', 'HDele4'], 'Prof 24': ['HDele4', 'FDele9', 'FDele9'], 'Prof 25': ['FDele2', 'FDele2', 'HDele6'], 'Prof 26': ['FDele7', 'FDele6', 'FDele6'], 'Prof 27':

['HDCDC5', 'HDCDC5', ''], 'Prof 28': ['FDCDC1', 'FDCDC2', 'FDCDC2'], 'Prof 29': ['HDele6', 'FDele3', 'FDele3'], 'Prof 30': ['HDele3', 'FDele4', 'FDele4']}}
{'x1': {'Prof 1': ['FDCDC5'], 'Prof 2': ['FDele1'], 'Prof 3': ['FDele1'], 'Prof 4': ['FDCDC9'], 'Prof 5': ['FDCDC7'], 'Prof 6': ['FDCDC9'], 'Prof 7': ['FDCDC7'], 'Prof 8': ['HDele5'], 'Prof 9': ['FDele3'], 'Prof 10': ['FDele8']}, 'x2': {'Prof 11': ['HDCDC1', 'HDCDC1'], 'Prof 12': ['FDele6', 'FDele6'], 'Prof 13': ['FDele9', 'FDele9'], 'Prof 14': ['HDCDC2', 'HDCDC2'], 'Prof 15': ['HDCDC4', 'HDCDC4'], 'Prof 16': ['HDCDC5', 'HDCDC5'], 'Prof 17': ['HDele2', 'HDele2'], 'Prof 18': ['HDele4', 'HDele4'], 'Prof 19': ['', ''], 'Prof 20': ['FDCDC3', 'FDCDC3']}, 'x3': {'Prof 21': ['FDCDC2', 'FDCDC2', 'FDCDC8'], 'Prof 22': ['FDCDC8', 'FDCDC10', 'FDCDC10'], 'Prof 23': ['FDCDC4', 'FDCDC4', 'FDele10'], 'Prof 24': ['FDele10', 'FDele5', 'FDele5'], 'Prof 25': ['FDele4', 'FDele4', 'HDele3'], 'Prof 26': ['FDele3', 'FDele8', 'FDele7'], 'Prof 27': ['HDCDC3', 'HDCDC3', 'HDele5'], 'Prof 28': ['FDCDC5', 'FDCDC1', 'FDCDC1'], 'Prof 29': ['HDele3', 'FDCDC6', 'FDCDC6'], 'Prof 30': ['FDele2', 'FDele2', 'FDele7']}}
{'x1': {'Prof 1': ['FDCDC1'], 'Prof 2': ['FDele1'], 'Prof 3': ['FDele1'], 'Prof 4': ['HDele1'], 'Prof 5': ['HDele1'], 'Prof 6': ['FDCDC7'], 'Prof 7': ['FDCDC7'], 'Prof 8': ['FDele10'], 'Prof 9': ['FDele5'], 'Prof 10': ['HDele5']}, 'x2': {'Prof 11': ['FDele6', 'FDele6'], 'Prof 12': ['', 'HDele5'], 'Prof 13': ['HDCDC1', 'HDCDC1'], 'Prof 14': ['HDCDC2', 'HDCDC2'], 'Prof 15': ['HDCDC3', 'HDCDC3'], 'Prof 16': ['HDCDC4', 'HDCDC4'], 'Prof 17': ['FDCDC4', 'FDCDC4'], 'Prof 18': ['FDCDC5', 'FDCDC5'], 'Prof 19': ['FDCDC3', 'FDCDC3'], 'Prof 20': ['FDCDC6', 'FDCDC6']}, 'x3': {'Prof 21': ['FDCDC8', 'FDCDC8', 'FDCDC9'], 'Prof 22': ['FDCDC9', 'FDCDC10', 'FDCDC10'], 'Prof 23': ['FDele10', 'HDele4', 'HDele3'], 'Prof 24': ['HDele3', 'FDele7', 'FDele7'], 'Prof 25': ['FDele8', 'FDele8', 'FDele9'], 'Prof 26': ['FDele5', 'HDele6', 'HDele6'], 'Prof 27': ['HDCDC5', 'HDCDC5', ''], 'Prof 28': ['FDCDC1', 'FDCDC2', 'FDCDC2'], 'Prof 29': ['FDele9', 'FDele3', 'FDele3'], 'Prof 30': ['FDele2', 'FDele2', 'HDele4']}}

Crash Tests

Crash 1: If the number of courses that the professors can take is less than number of CDS, the matrix can't be formed and the code crashes.

Example:

Input: assign_profs(1,1,1,1)

FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2

FDele1 FDele2 FDele3 FDele4 HDele1 HDele2

FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1 HDele2

FDCDC2 FDCDC1 FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1 HDele2

FDCDC3 FDCDC2 FDCDC1 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1 HDele2

Error:

```
if M[i, j] == 0 and not covered_cols[j]: # If value is a zero that is not covered, add to count
                    ~~~~~~~~~~~~^^^
```

IndexError: index 6 is out of bounds for axis 0 with size 6

Crash 2: If the number of professors is greater than the number of courses available, the code assigns some courses to more than two professors.

Example:

Input: assign_profs(5,4,5,1)

FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2

FDele1 FDele2 FDele3 FDele4 HDele1 HDele2

FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1 HDele2

FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1 HDele2 FDCDC1

FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1 HDele2 FDCDC1 FDCDC2

FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1 HDele2 FDCDC1 FDCDC2 FDCDC3

HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1 HDele2 FDCDC1 FDCDC2 FDCDC3 FDCDC4

HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1 HDele2 FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1

FDele1 FDele2 FDele3 FDele4 HDele1 HDele2 FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2

FDele2 FDele3 FDele4 HDele1 HDele2 FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1

FDele3 FDele4 HDele1 HDele2 FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2

FDele4 HDele1 HDele2 FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3

HDele1 HDele2 FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4

HDele2 FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1

FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1 HDele2

FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1 HDele2 FDCDC1

Output:

{'x1': {'Prof 1': ['FDCDC1'], 'Prof 2': ['HDCDC2'], 'Prof 3': ['FDele1'], 'Prof 4': ['FDele1'], 'Prof 5': ['FDele1']}, 'x2': {'Prof 6': ['FDele1', 'HDCDC2'], 'Prof 7': ['FDele2', 'FDele2'], 'Prof 8': ['FDele2', 'FDele2'], 'Prof 9': ['FDele3', 'FDele3']}, 'x3': {'Prof 10': ['FDele4', 'FDele4', 'HDele1'], 'Prof 11': ['HDele1', 'HDele2', 'HDele2'], 'Prof 12': ['FDCDC1', 'FDCDC2', 'FDCDC2'], 'Prof 13': ['FDCDC3', 'FDCDC3', 'FDCDC4'], 'Prof 14': ['FDCDC4', 'HDCDC1', 'HDCDC1']}}

Here, FDele1 gets assigned to four different professors.

Crash 3: If input contains extra blank spaces, they get considered as courses (or preferences) and can lead to crashes or empty assignments.

Example:

Input:
FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2
FDele1 FDele2 FDele3 FDele4 HDele1 HDele2
FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDele1 FDele2 FDele3 FDele4 HDCDC1 HDCDC2 HDele1 HDele2
FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1 HDele2
FDele1 FDele2 FDele3 FDele4 HDele1 HDele2 FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2
FDCDC1 FDCDC2 FDCDC3 FDCDC4 FDele1 FDele2 FDele3 FDele4 HDCDC1 HDCDC2 HDele1 HDele2
FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2 FDele1 FDele2 FDele3 FDele4 HDele1 HDele2
FDele1 FDele2 FDele3 FDele4 HDele1 HDele2 FDCDC1 FDCDC2 FDCDC3 FDCDC4 HDCDC1 HDCDC2

if M[i, j] == 0 and not covered_cols[j]: # If value is a zero that is not covered, add to count
~~~~~~~~~~~~^^^
IndexError: index 12 is out of bounds for axis 0 with size 12

Code crashes as the initial space is considered as a CDC and hence matrix can’t be formed.
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