LAB Assignment 11
CS205
Topic: Max Flow
Lab Assignment: a,b

a. A restaurant called Angeethi launch a home delivery service with variety of different lunch menu items. To deliver in time, Angeethi prepared all the items a priori. A specific list of item is prepared by them. Unfortunately, they can only prepare those items in limited quantities, so they often run out of items, making customers sad. Customer provides a number of choices (at least 2) from the list of items. Out of all those choices exactly one item needs to be delivered to the customer within a stipulated time, otherwise if they fail to deliver, they provide a 100 Rs Angeethi voucher to customer. Anggethi management is looking for some efficient strategy which would satisfy maximum order received from customer and minimize the failure.

Input:
Number of items prepared by Angeethi: m
In next m line read out name of the items (string) and number of dishes prepared for that specific item (for example a particular input line can be
“Paneer Pasinda”, 5
which means 5 plates of Paneer Pasinda is prepared by Angeethi.)
Read out number of customer: N
For each customer: read out customer name (string) and read out number of choices (at least 2) and specific choices (for example a specific line can be “Sourav”, 2, “Paneer Pasinda”, “Paneer tikka”
Which means a customer named Sourav provides 2 choices Paneer Pasinda and Paneer Tikka out of which exacly one item need to be delivered to Sourav)

Output Format: Number of customer satisfied (P)
Next P lines
Name of customer, item delivered to the customer

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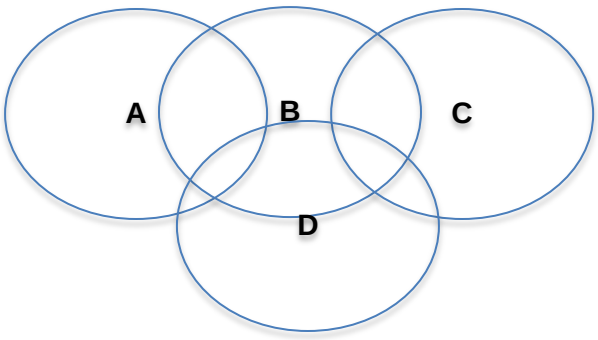

b. A, B, C, D are cellular towers. Circle around those towers are indicating the area in which a cell phone can associate with that tower. One cellular tower can provide required bandwidth to 18 cell phones. Please find distribution of cell phone across zones

Exclusive zone of cell tower A=> 10
Exclusive zone of cell tower B=> 8
Exclusive zone of cell tower C=> 12
Exclusive zone of cell tower D=> 9
Shared Zone of A & B => 5
Shared Zone of A & D => 2
Shared Zone of A & B & D=> 4
Shared Zone of B & C => 5
Shared Zone of B & D => 5
Shared Zone of B & C & D=> 3
Shared Zone of C & D=> 3

A cell phone in an exclusive zone of a tower can be provided bandwidth only by that specific tower. However, a cell phone which is in shared zone of X & Y & Z can get required bandwidth either from X, or from Y or from Z (but not from 2 towers at the same time). Please find number of maximum cell phone which can be satisfied. Please provide a possible distribution of satisfied devices across zones.

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