1.

1.

2. We can solve this ~~problem~~ by making all
cost ~~negative~~ weight values and running
~~maxflow Ford-Fulkerson~~ algorithm. The total profit
then equals the flow into ~~node~~ t.

2.
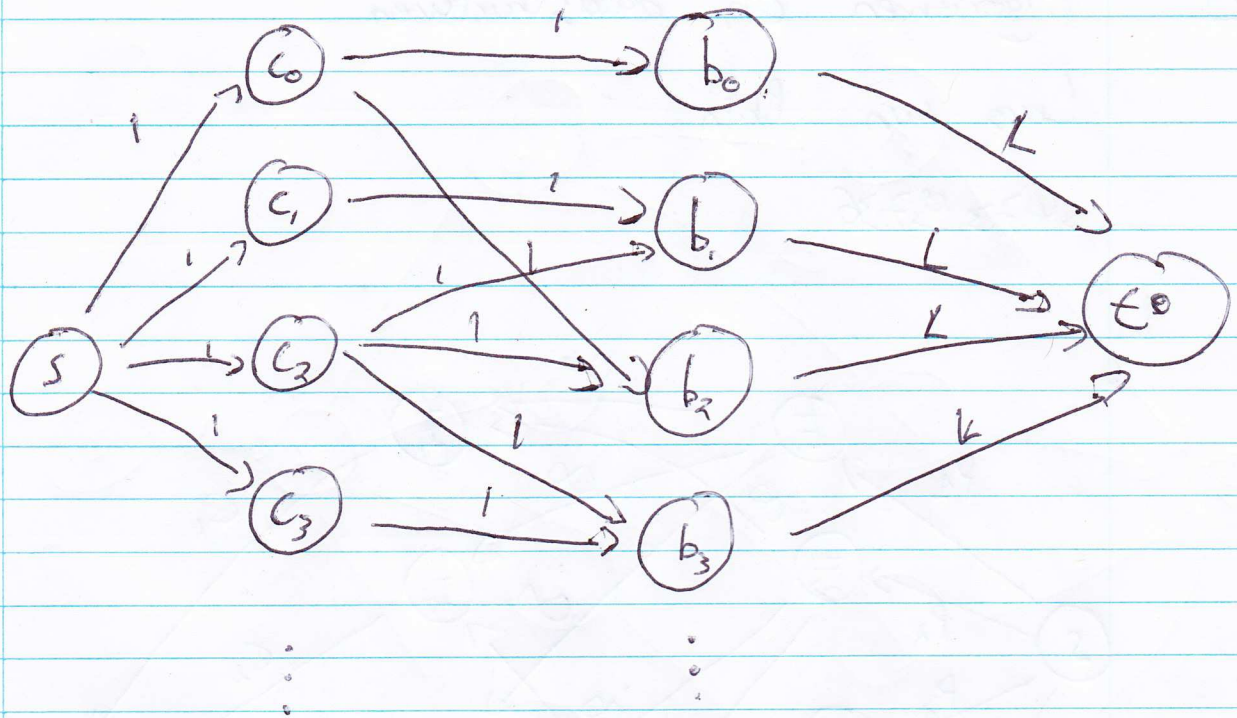
We can create a flow network for this problem by creating a source node s connected to all clients c_n with directed edge with weight 1 vertex. Now we connect all clients c_n to all the base stations b_n in range. These edges also have weight 1. Now we only need to connect all base station nodes to the sink node t with edge weight 1. We can then run Ford-Fulkerson to calculate max-flow.

3.
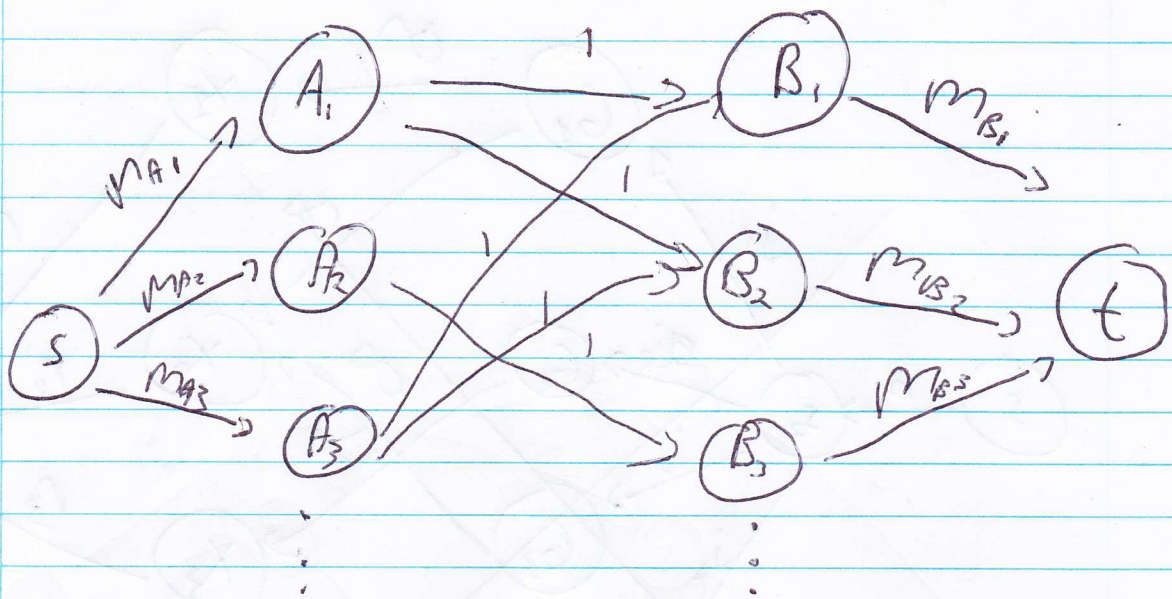
We can create a flow network withe the following specifications:

- We create a source node s with directed edges to each A_i with weight m_{A_i}

- Then we only need to draw directed edges with weight 1 from each A_i to each B_i if the A_i reviewer is specialized in the topic of B_i

- Then we draw directed edges from B_i to t with weight M_{B_i}

We can now run ford-fulkersons algorithm to get max flow.

4.
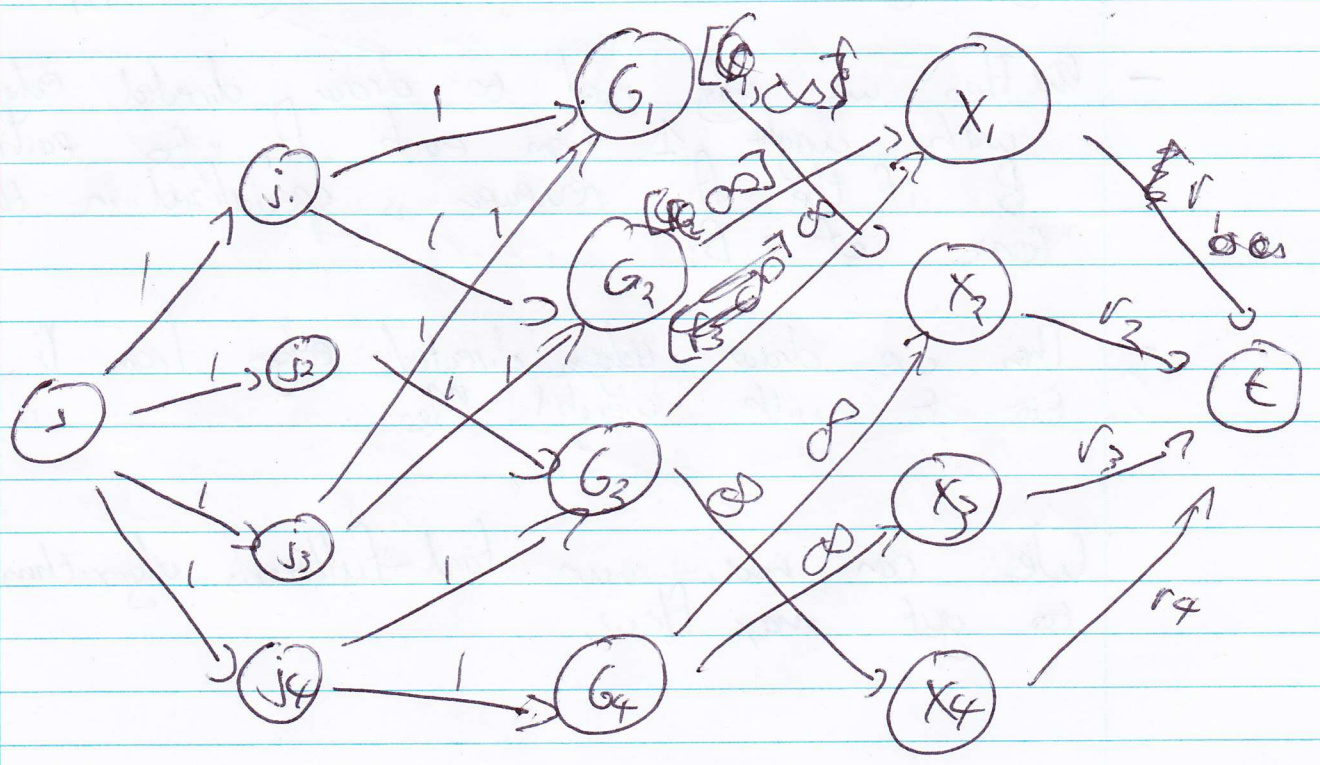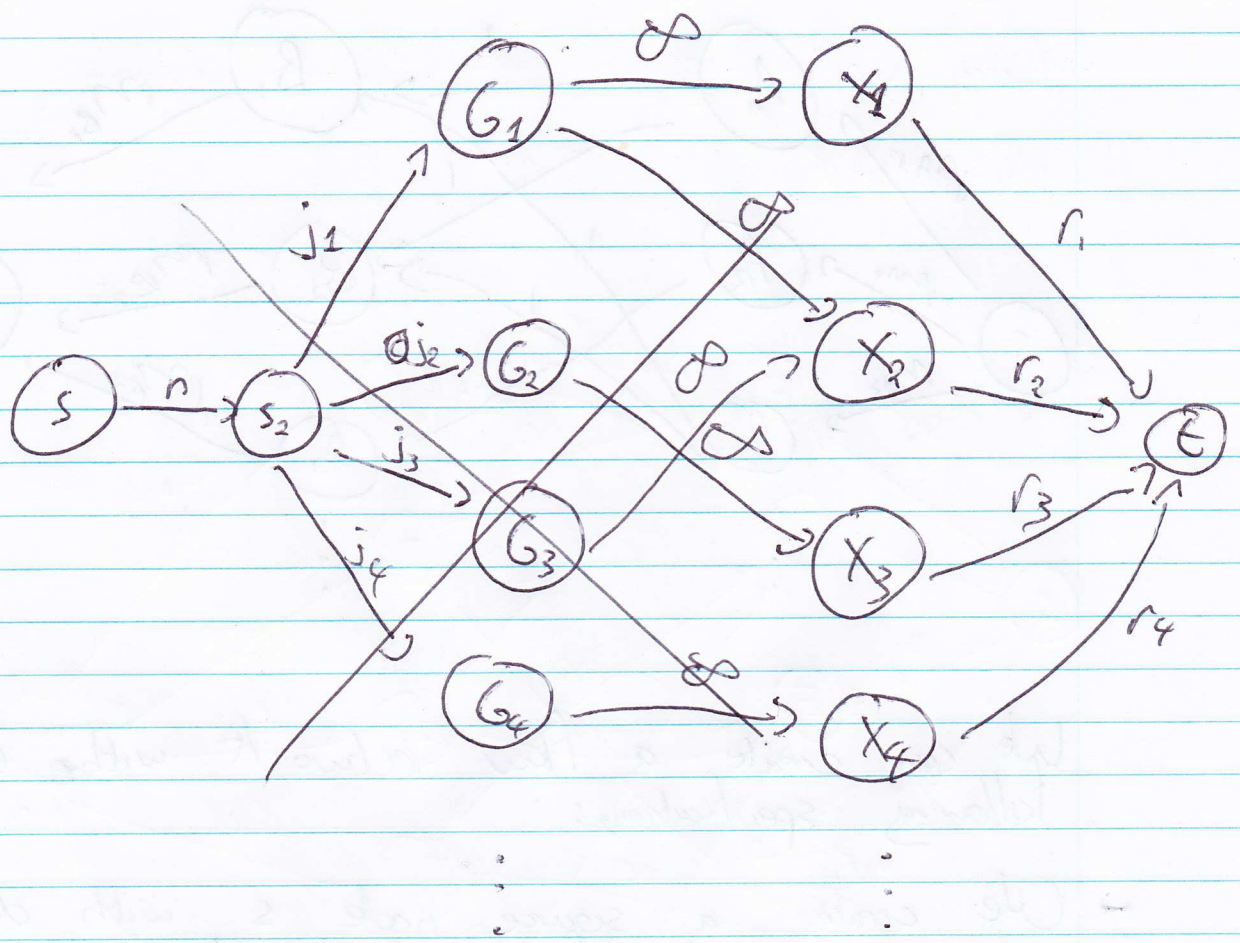
We can create a set node for each user q j_i. The node s will be connected to each j_i with a directed edge with weight 1. We can then create a node for each group and connect all users with their groups respectively. These directed edges will also have weight 1. Then we can connect the groups to the advertising groups with weight ∞ and the advertising groups to the sink node t with weight v_i.

Now if we run we can run Ford-Fulkerson to see if the conditions are satisfied.