7.8 Survey Design

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De procedure is als volgt:

- u neemt de vragenlijst mee naar uw C1000 supermarkt;
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- thuis geeft u uw beoordeling door. Dit kan op twee manieren gedaan worden:
  - via het Internet: op deze pagina. U heeft hiervoor de unieke code nodig. Mocht u die kwijt zijn wilt u dan contact opnemen met C1000 Consumentenservice: 0800-023 0363;
  - via de telefoon: u belt het gratis nummer 0800-567 8000 en beantwoordt de vragen die u gesteld worden;

De beoordelingen dienen plaats te vinden gedurende de volgende drie periodes:

- 22 januari t/m 3 februari
- 5 maart t/m 17 maart
- 16 april t/m 28 april

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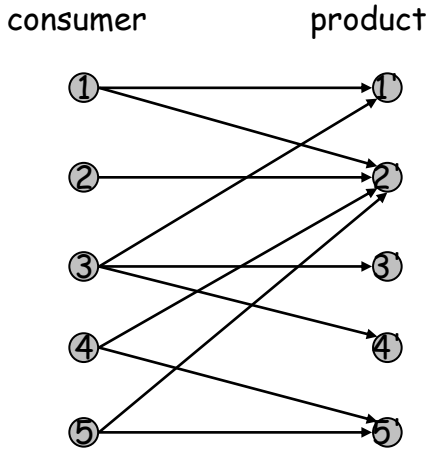
Survey Design

Survey design.

- Design survey asking n_1 consumers about n_2 products.
- Can only survey consumer i about a product j if they own it.
- Ask consumer i about between c_i and c_i' products.
- Ask between p_j and p_j' consumers about product j.



Goal. Design a survey that meets these specs, if possible.

Q. What if $c_i = c_i' = p_i = p_i' = 1$?

TU Delft

Survey Design

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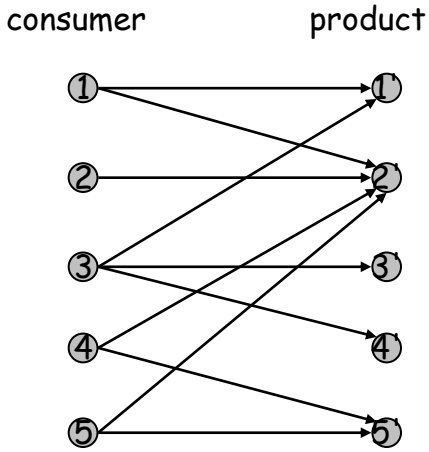

Goal. Design a survey that meets these specs, if possible.

Q. What if $c_i = c_i' = p_i = p_i' = 1$?

A. Bipartite perfect matching. Special case.

Q. How to formulate as a flow problem? (1 min)

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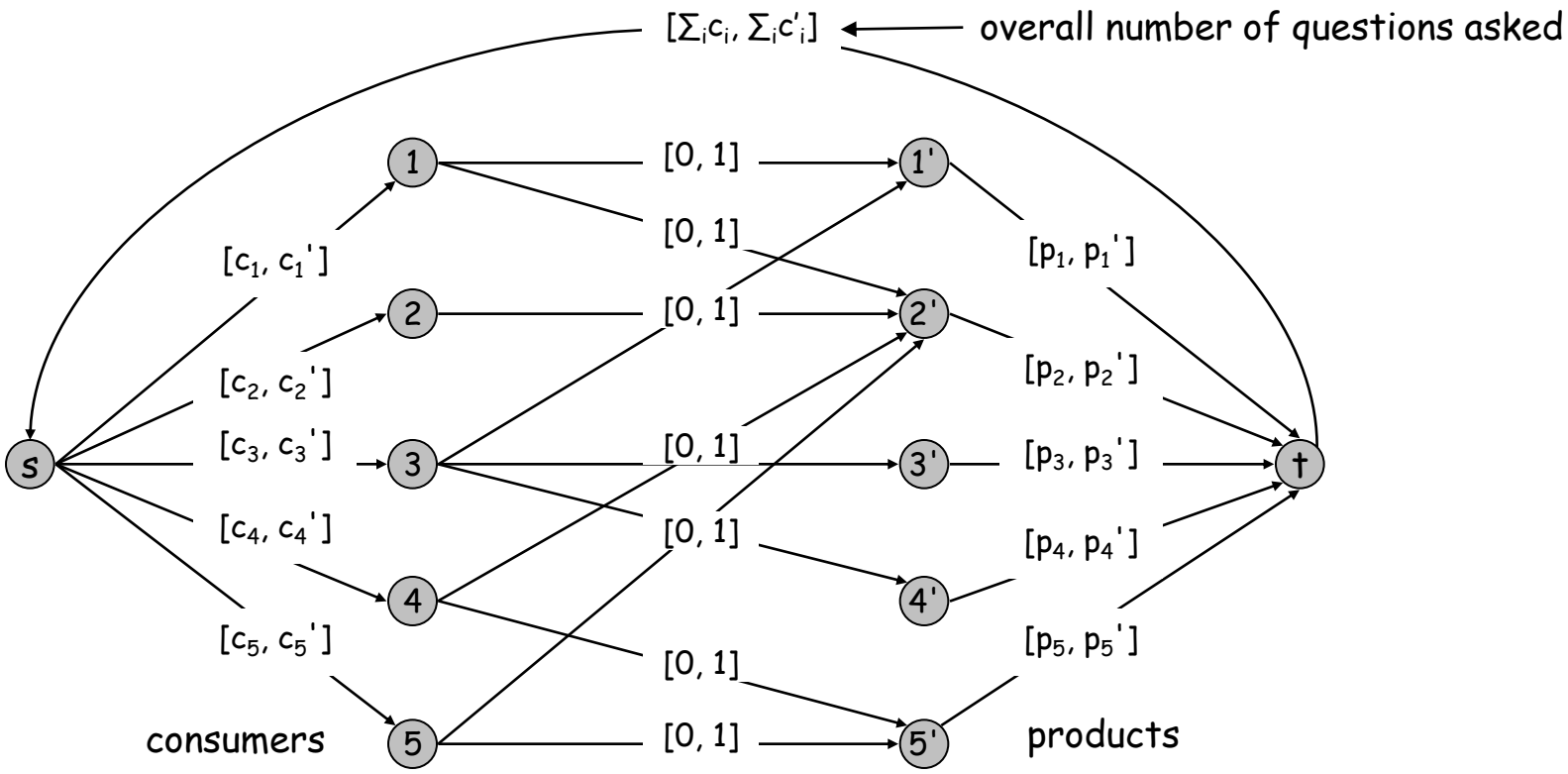
Algorithm. Formulate as a circulation problem with lower bounds.

- Include an edge (i, j) if customer i owns product j.
- Feasible integer circulation $\Leftrightarrow$ feasible survey design. (p.387)



Q. How to formulate as a circulation problem with demands (no lower bounds)?

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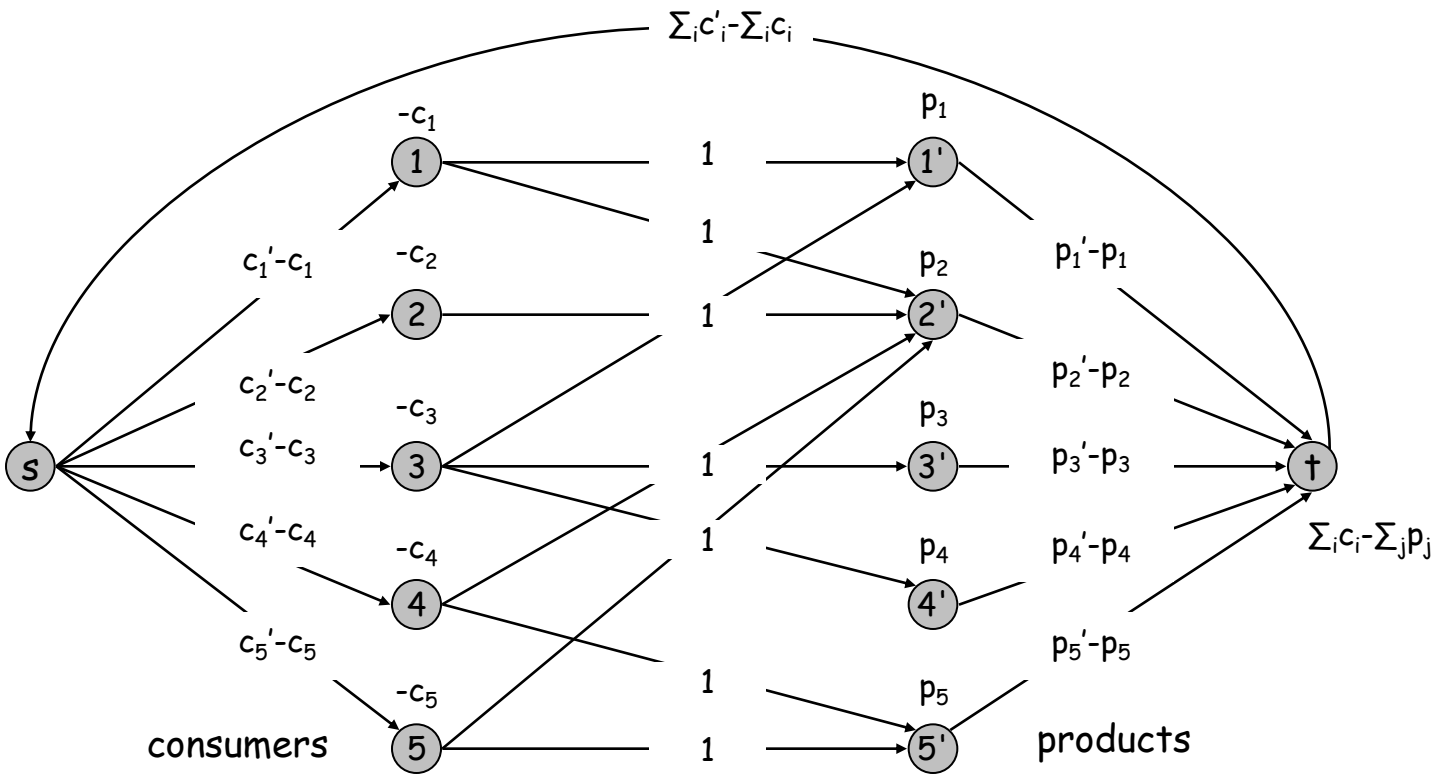
$$\sum_{v\,:\,d(v)>0} d(v) \;=\; \sum_{v\,:\,d(v)<0} -d(v) \;=:\; D$$

Q. How to formulate as circulation problem without lower bounds?

A. see below; circulation should be: if $\sum_i c_i \geq \sum_j p_j$ then $\sum_i c_i$
else if $\sum_i c_i \leq \sum_j p_j$ then $\sum_j p_j$



Q. How does this look as a normal flow problem?

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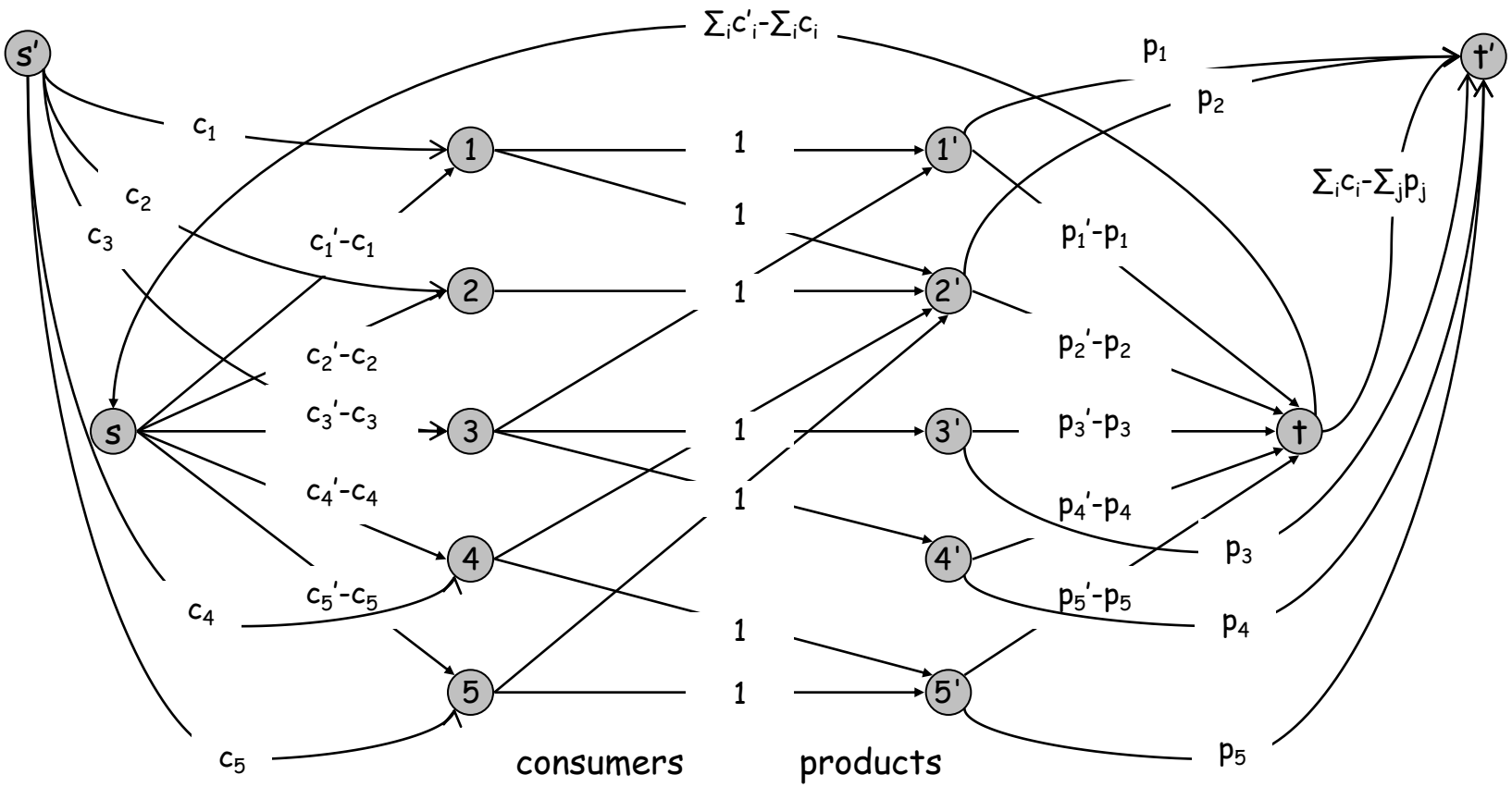
A1. see below, if $\sum_i c_i \geq \sum_j p_j$ then flow should be $\sum_i c_i$



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Q. How does this look as a normal flow problem?

A2. see below, if $\sum_i c_i \le \sum_j p_j$ then flow should be $\sum_j p_j$