SUPPLEMENTARY MATERIAL

Evaluating Graphical Manipulations in Automatically Laid Out LineSets: Supplementary Material

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1. Diagrams and Questions used to Introduce Participants to Concepts of LineSets

This supplementary material includes all of the diagrams and questions asked of participants during the study, including the diagrams used to introduce participants to LineSets. We note that the diagrams are scaled to 35% of their size, due to space limitations.
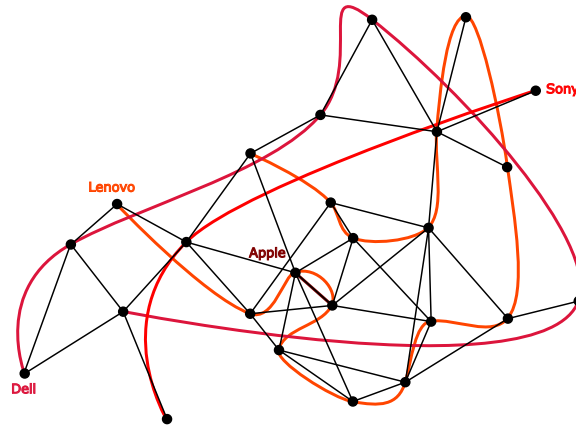

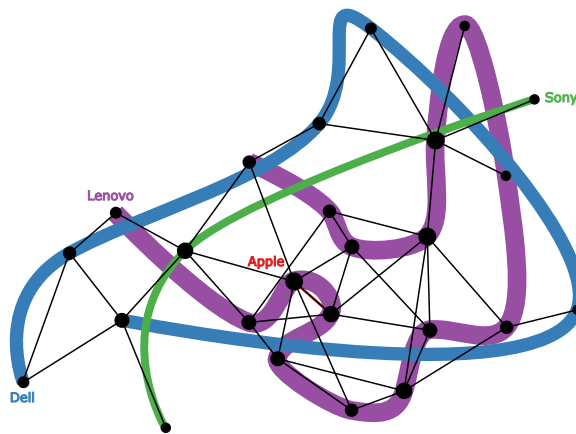CONTACT Gem Stapleton. Email: g.e.stapleton@brighton.ac.uk

Introduction Diagram

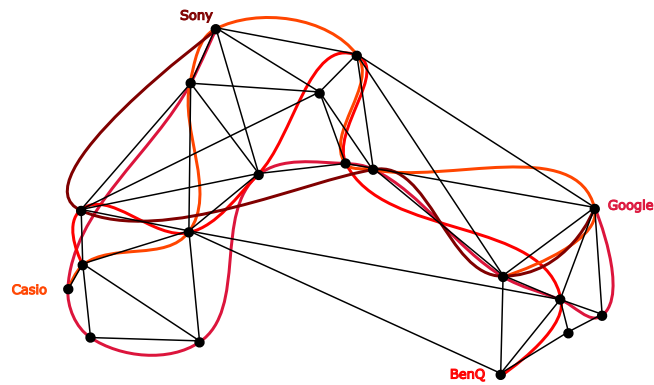Diagrams used to introduce LineSets to participants.

- Default:

- Treated:

Example question 1

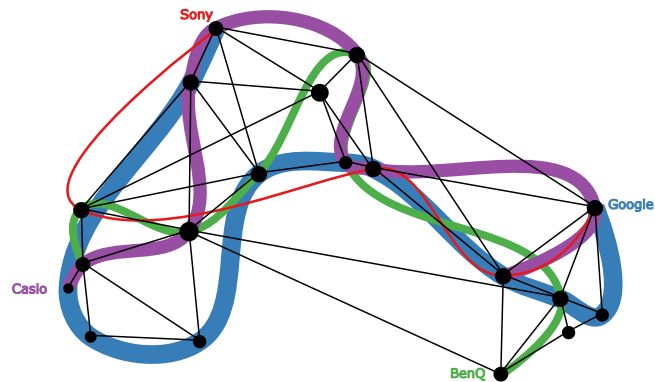**Question:** Which product was bought the most times?

- Sony
- Google
- Casio
- BenQ

Answer: Google

- **Default Group Diagram:**
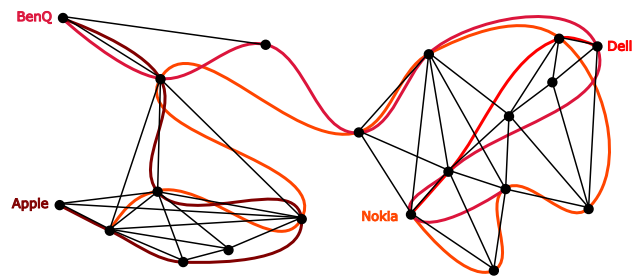

- **Treated Group Diagram:**

Example question 2

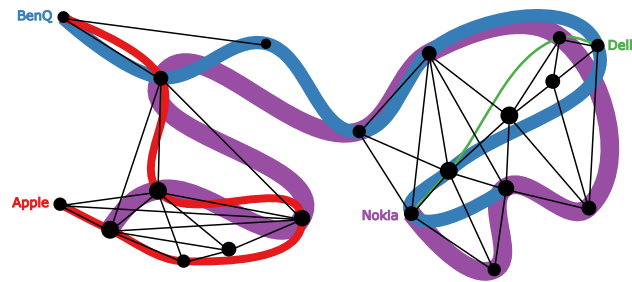**Question:** Which product was bought the fewest times?

- Nokia
- BenQ
- Apple
- Dell

Answer: Dell

- **Default Group Diagram:**

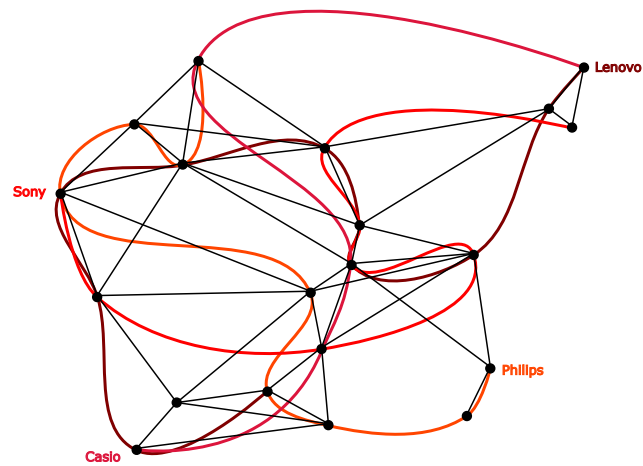

- **Treated Group Diagram:**

Example question 3

Question: How many friends do the people with the most friends have?
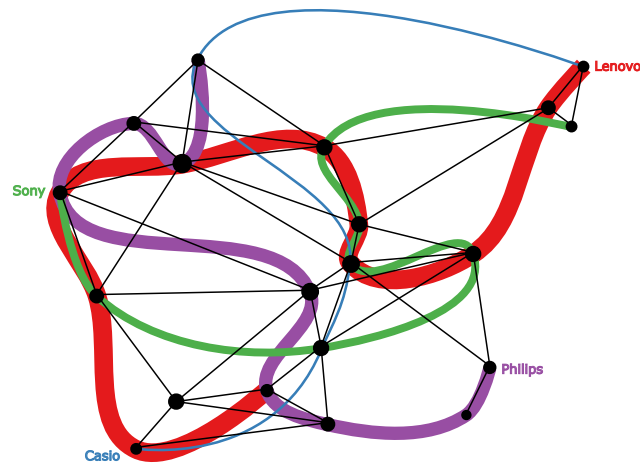
- 4
- 5
- 6
- 7

Answer: 7

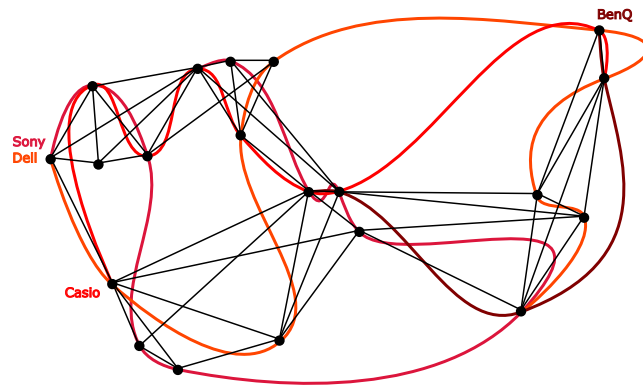- **Default Group Diagram:**

- **Treated Group Diagram:**

Example question 4

Question: How many friends do the people with the fewest friends have?
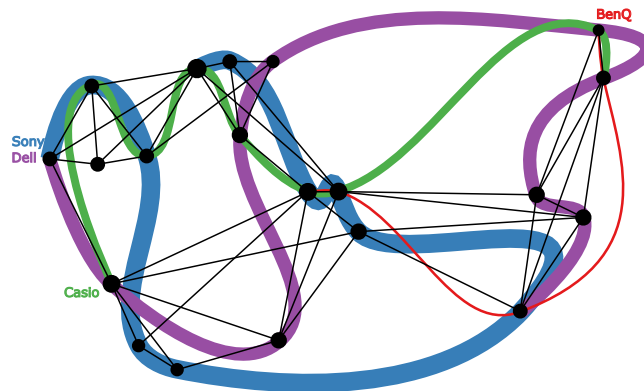
- 0
- 1
- 2
- 3

Answer: 2

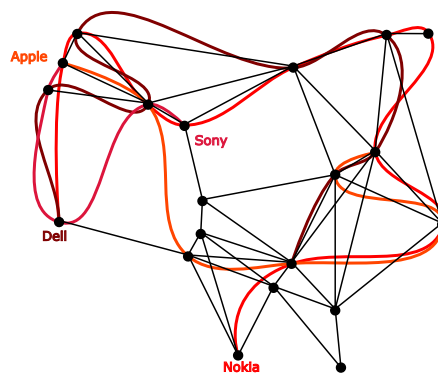- **Default Group Diagram:**

- **Treated Group Diagram:**

Example question 5

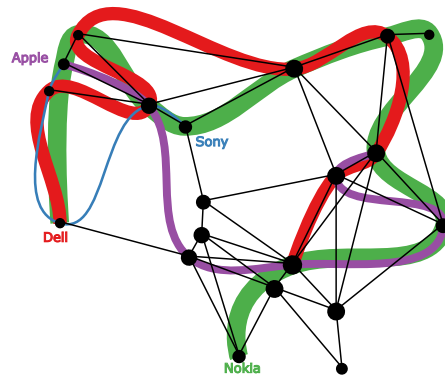**Question:** How many people who bought Dell also bought Sony?

- 1
- 2
- 3
- 4

Answer: 3

- **Default Group Diagram:**
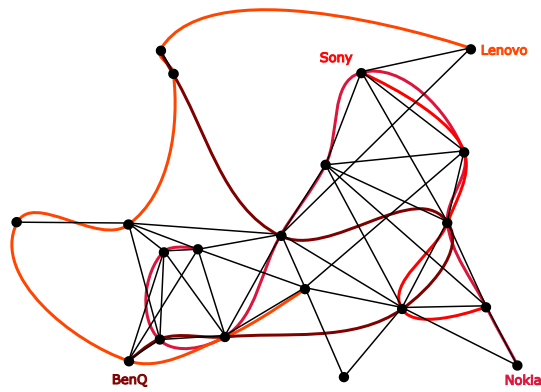

- **Treated Group Diagram:**

Example question 6

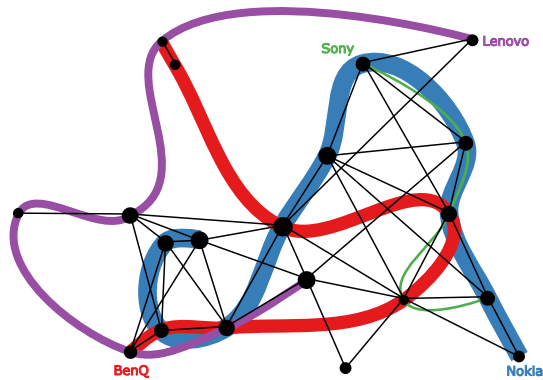**Question:** How many other brands were bought by people who have Nokia?

- 0
- 1
- 2
- 3

Answer: 3

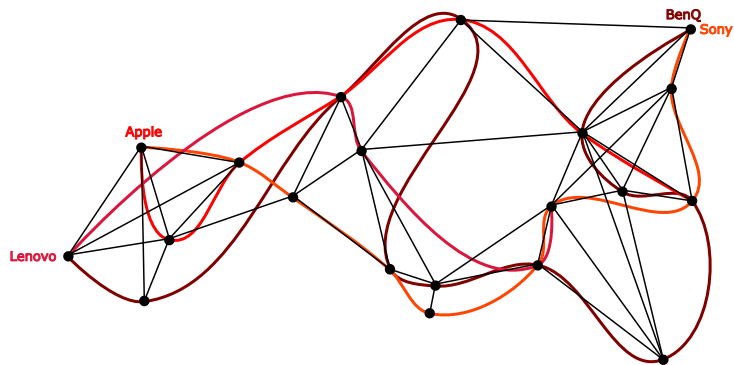- **Default Group Diagram:**

- **Treated Group Diagram:**

Paper-based training question 1

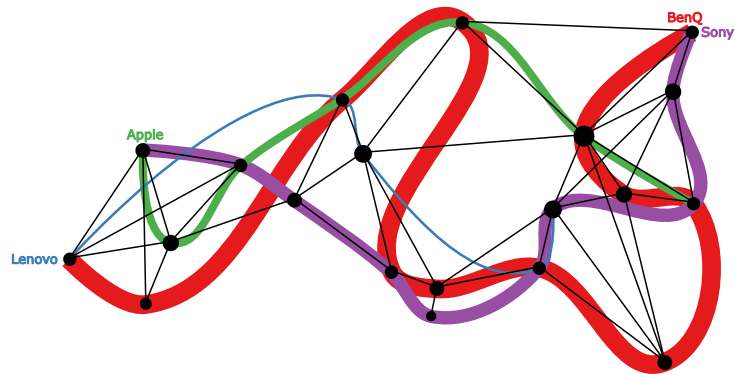**Question:** Which product was bought the most times?

- Lenovo
- Sony
- BenQ
- Apple

Answer: BenQ

- **Default Group Diagram:**

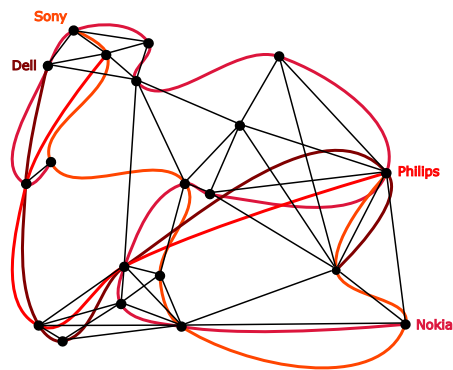

- **Treated Group Diagram:**

Paper-based training question 2

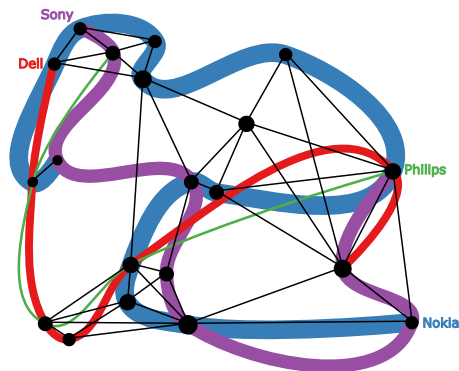**Question:** Which product was bought the fewest times?

- Philips
- Sony
- Dell
- Nokia

Answer: Philips

- **Default Group Diagram:**
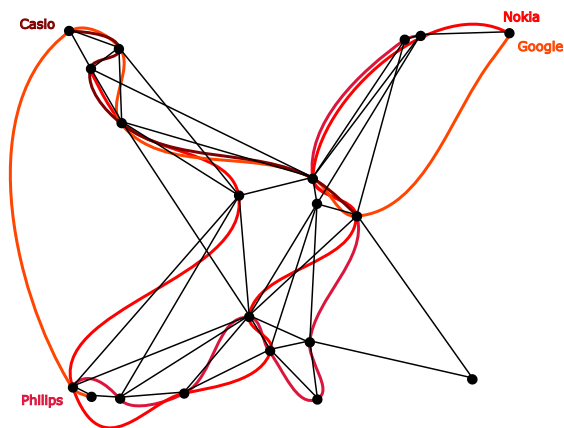

- **Treated Group Diagram:**

Paper-based training question 3

Question: How many friends do the people with the most friends have?
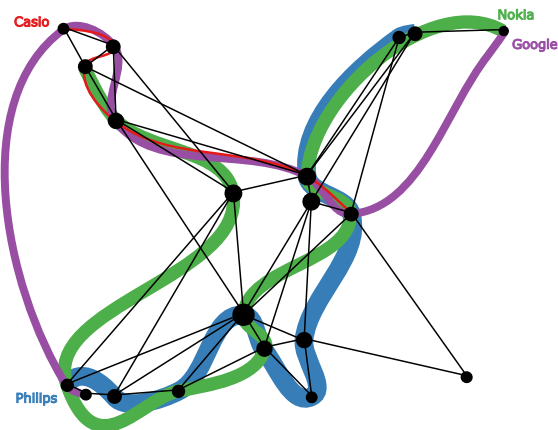
- 8
- 9
- 10
- 11

Answer: 9

- **Default Group Diagram:**
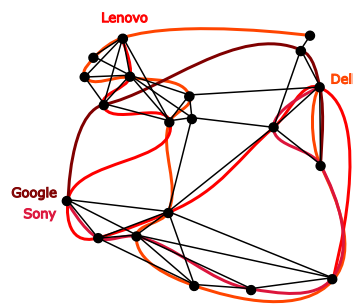

- **Treated Group Diagram:**

Paper-based training question 4

Question: How many friends do the people with the fewest friends have?
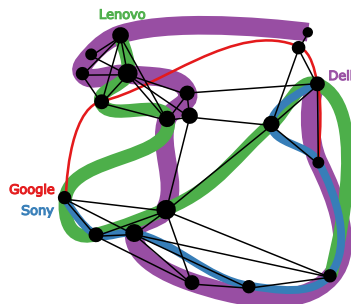
- 0
- 1
- 2
- 3

Answer: 1

- **Default Group Diagram:**
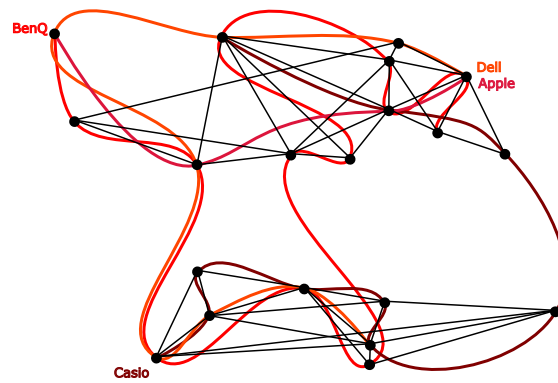

- **Treated Group Diagram:**

Paper-based training question 5

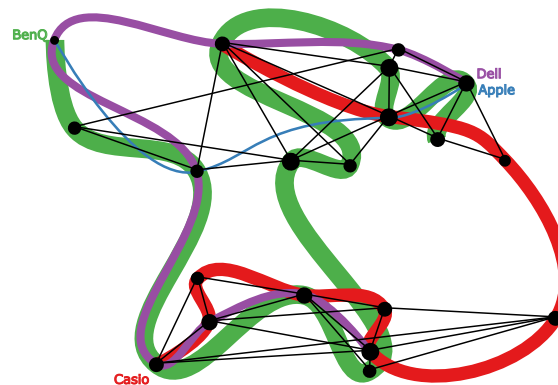**Question:** How many people who bought BenQ also bought Dell?

- 4
- 5
- 6
- 7

Answer: 4

- **Default Group Diagram:**
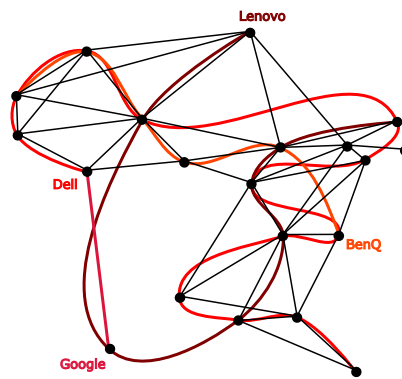

- **Treated Group Diagram:**

Paper-based training question 6

Question: How many other brands were bought by people who have Google?
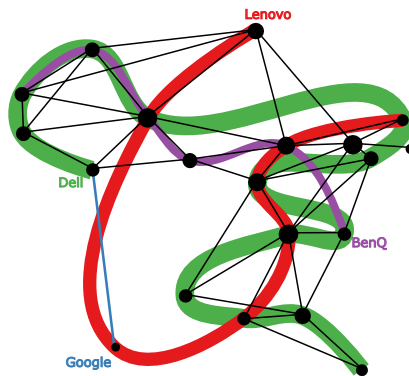
- 1
- 2
- 3
- 4

Answer: 2

- **Default Group Diagram:**

- **Treated Group Diagram:**

2. Diagrams and Questions used to Introduce Participants to Research Software in Automated Layouts Experiment
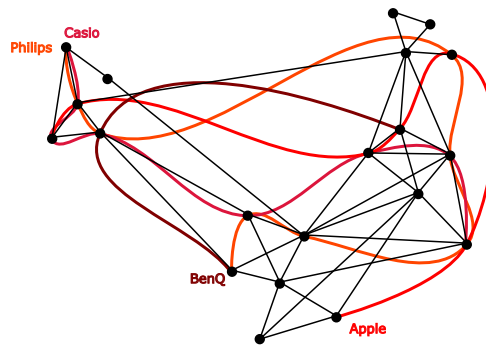
Computer-based training question 1
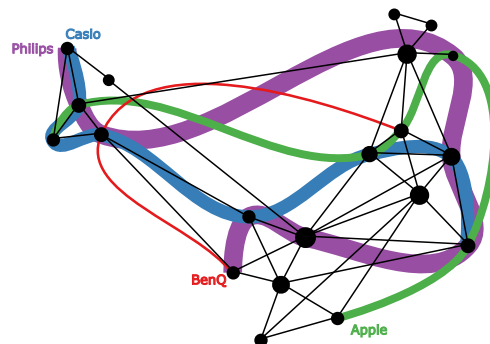
Question: Which product was bought the MOST times?

- BenQ
- Apple
- Casio
- Philips

Answer: Philips

- **Default Group Diagram:**
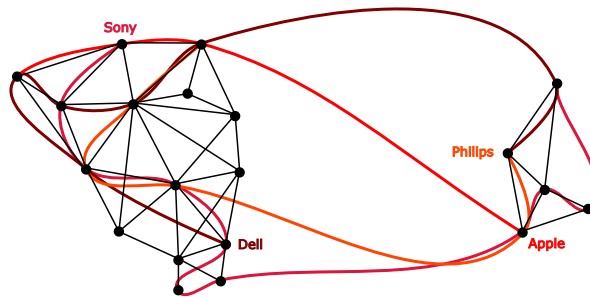

- **Treated Group Diagram:**

Computer-based training question 2

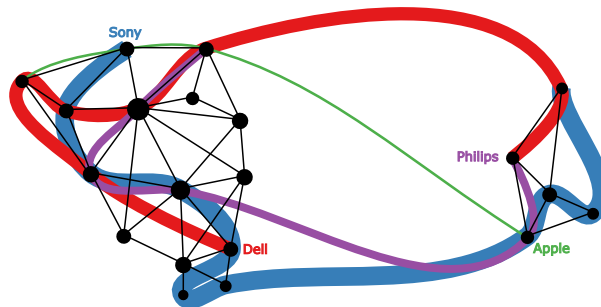**Question:** Which product was bought the FEWEST times?

- Apple
- Philips
- Dell
- Sony

Answer: Apple

- **Default Group Diagram:**
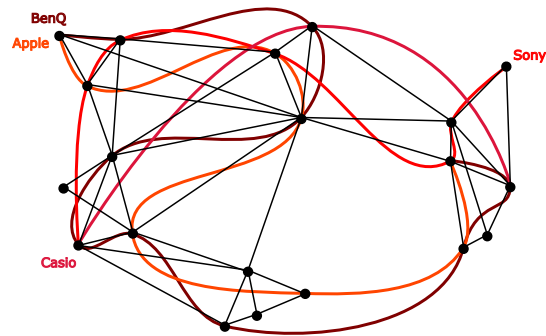

- **Treated Group Diagram:**

Computer-based training question 3

Question: How many friends do the people with the MOST friends have?
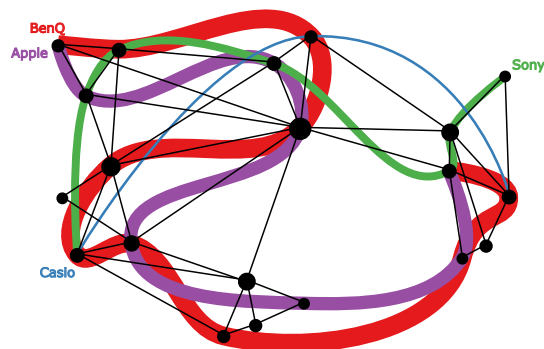
- 6
- 7
- 8
- 9

Answer: 9

- **Default Group Diagram:**
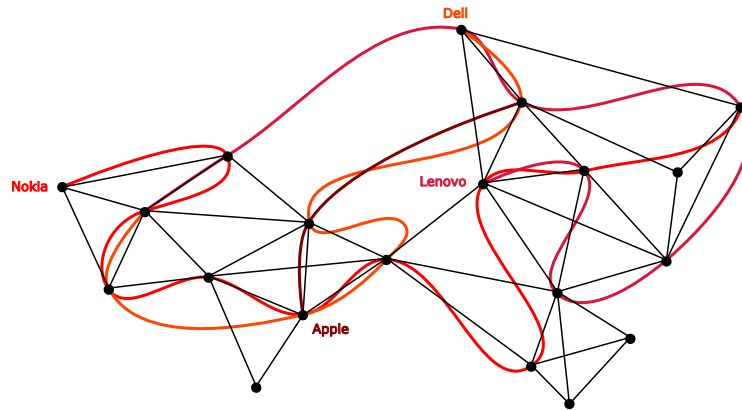

- **Treated Group Diagram:**

Computer-based training question 4

Question: How many friends do the people with the FEWEST friends have?
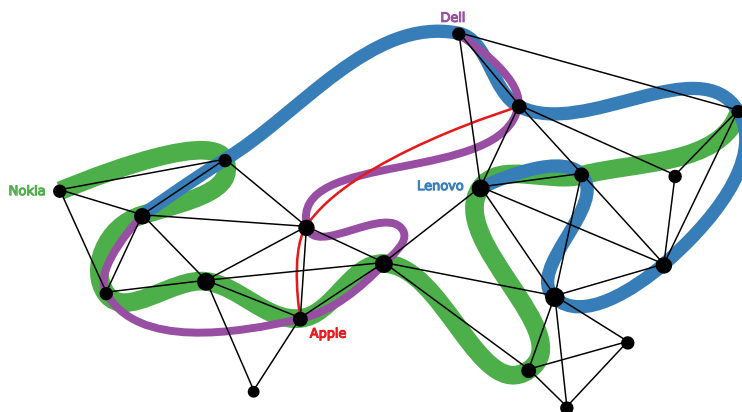
- 0
- 1
- 2
- 3

Answer: 2

- **Default Group Diagram:**
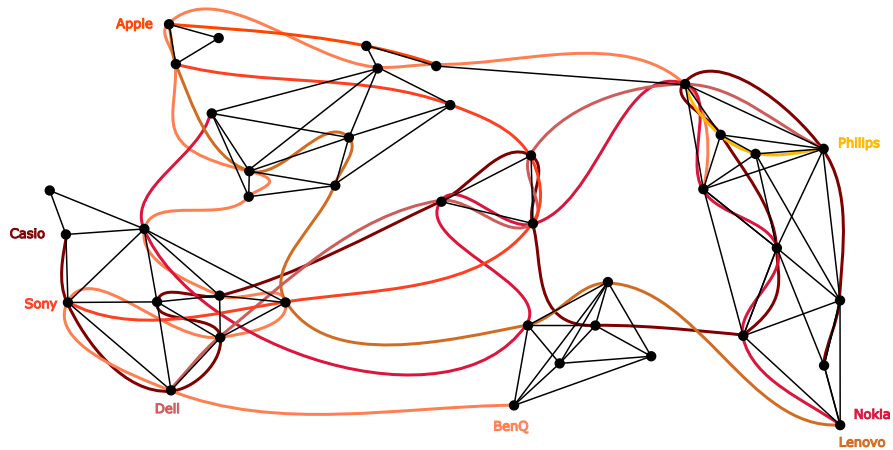

- **Treated Group Diagram:**

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Computer-based training question 5

Question: How many people who bought CASIO also bought SONY?
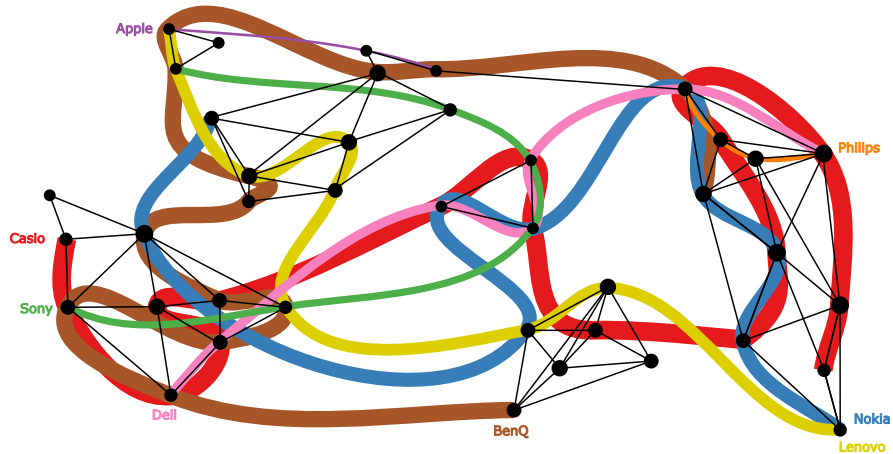
- 1
- 2
- 3
- 4

Answer: 3

- **Default Group Diagram:**
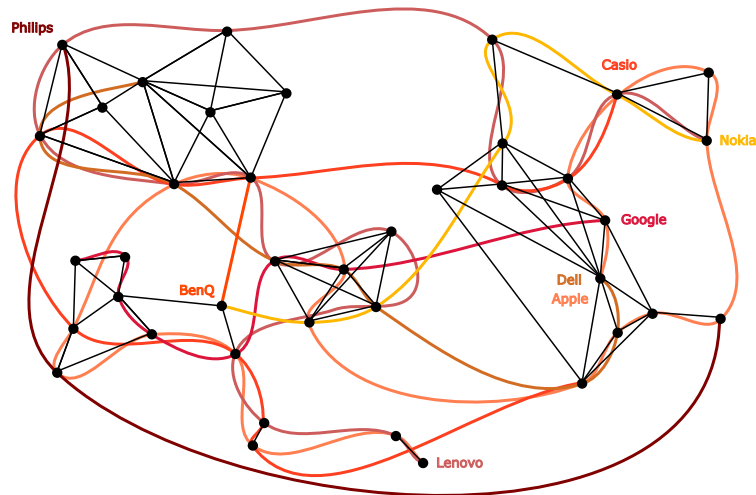

- **Treated Group Diagram:**

Computer-based training question 6

Question: How many other brands were bought by people who have NOKIA?
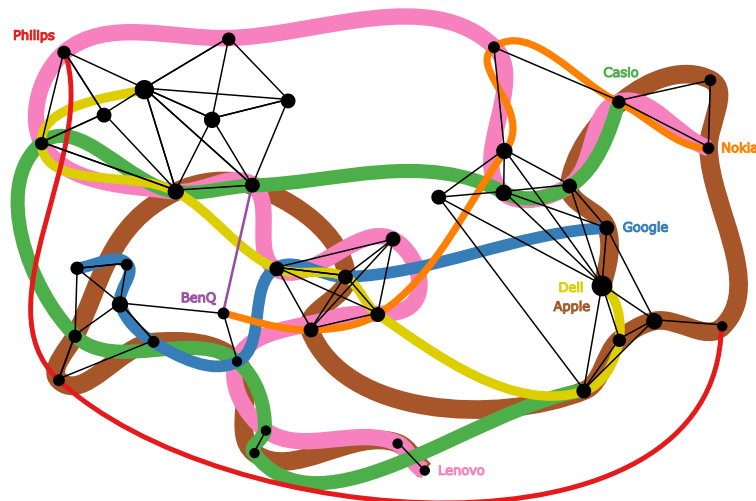
- 2
- 3
- 4
- 5

Answer: 5

- **Default Group Diagram:**

- **Treated Group Diagram:**

3. Diagrams and Questions used to Collect Performance Data in Automated Layouts Experiment
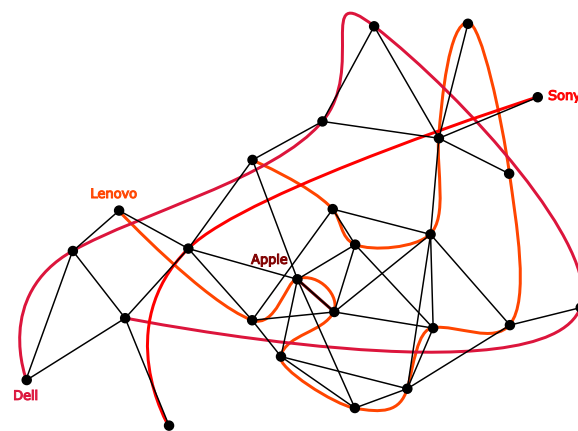
Performance question 1

SNAP dataset: 39070445

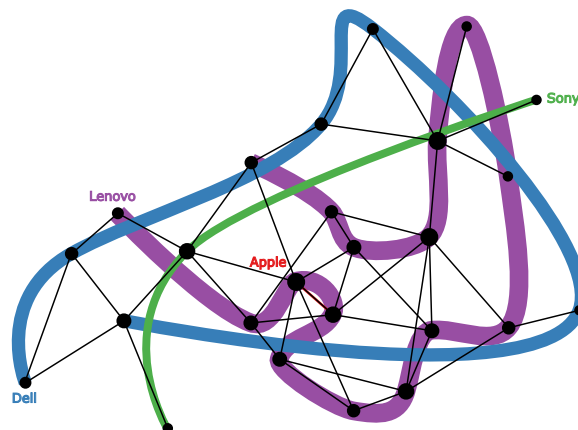**Question:** How many people who bought LENOVO also bought DELL?

- 0
- 1
- 2
- 3

Answer: 0

- **Default Group Diagram:**

- **Treated Group Diagram:**
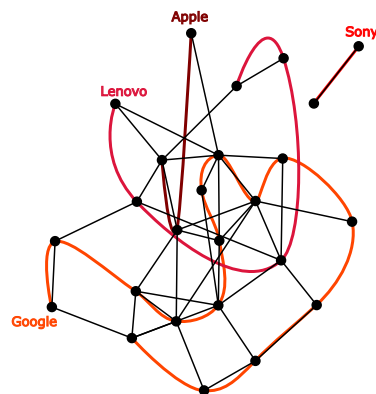
Performance question 2

SNAP dataset: 289738351

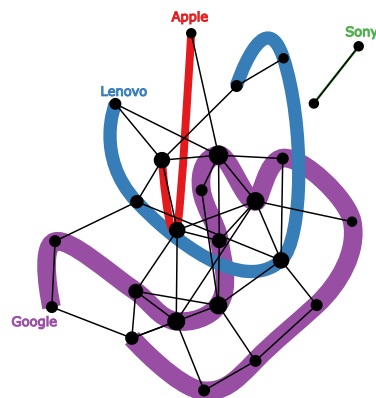 **Question:** Which product was bought the MOST times?

- Sony
- Apple
- Google
- Lenovo

Answer: Google

- **Default Group Diagram:**

- **Treated Group Diagram:**
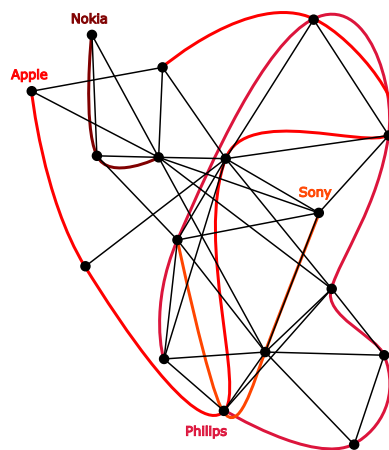
Performance question 3

SNAP dataset: 18687625

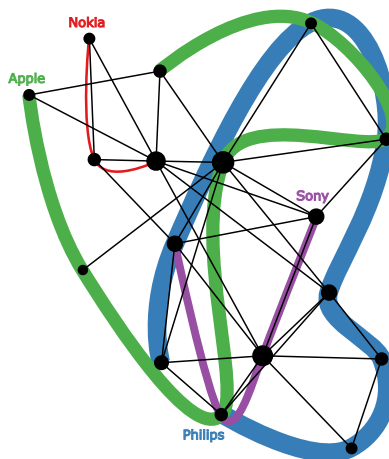**Question:** How many other brands were bought by people who have PHILIPS?

- 0
- 1
- 2
- 3

Answer: 2

- **Default Group Diagram:**

- **Treated Group Diagram:**
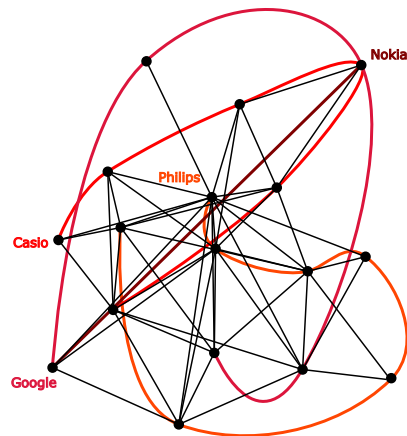
Performance question 4

SNAP dataset: 70492333
  Question: How many other brands were bought by people who have NOKIA?
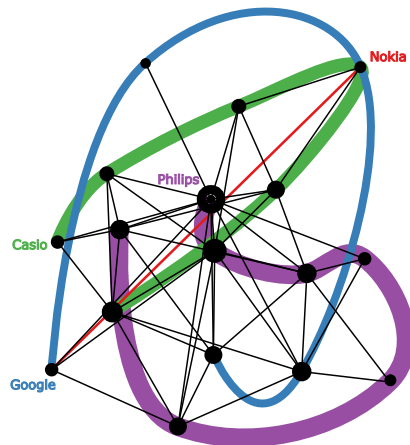
- 1
- 2
- 3
- 4

Answer: 2

- **Default Group Diagram:**

- **Treated Group Diagram:**
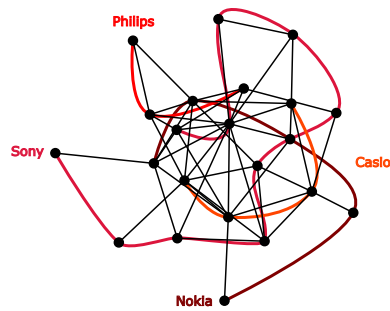
Performance question 5

SNAP dataset: 19725644

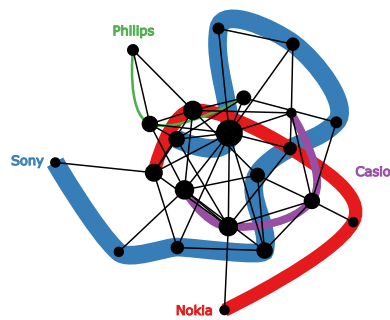Question: Which product was bought the MOST times?

- Sony
- Philips
- Nokia
- Casio

Answer: Sony

- **Default Group Diagram:**

- **Treated Group Diagram:**
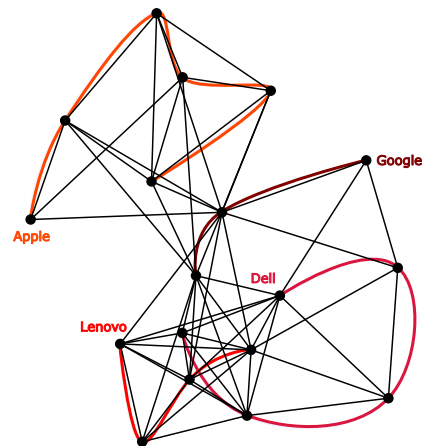
Performance question 6

SNAP dataset: 353767514

   Question: Which product was bought the FEWEST times?
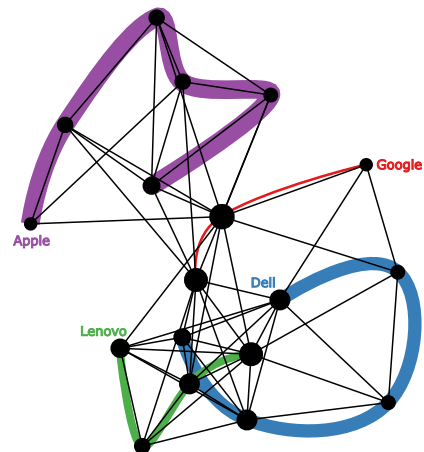
- Google
- Lenovo
- Dell
- Apple

Answer: Google

- **Default Group Diagram: SNAP dataset:**

- **Treated Group Diagram:**
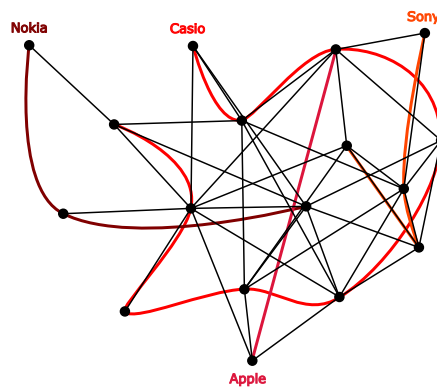
Performance question 7

Task Type: Extreme Set Size Min
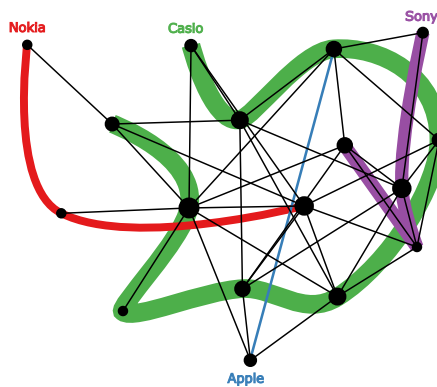 **Question:** Which product was bought the FEWEST times?

- Casio
- Sony
- Apple
- Nokia

Answer: Apple

- **Default Group Diagram:**

- **Treated Group Diagram:**
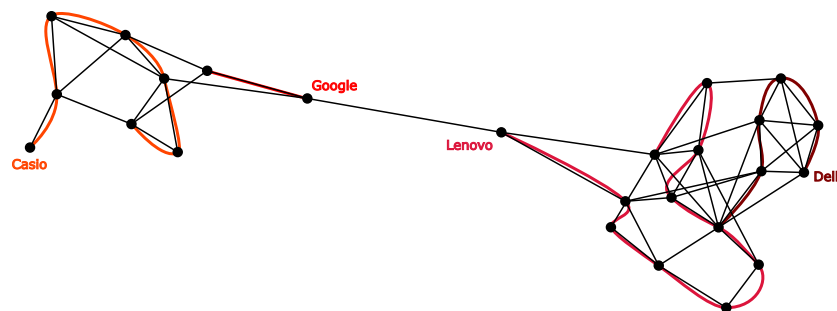
Performance question 8

Task Type: Extreme Node Degree Few
  Question: How many friends do the people with the FEWEST friends have?
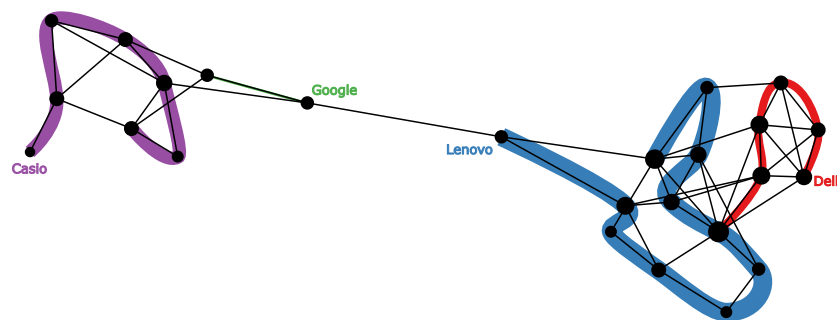
- 0
- 1
- 2
- 3

Answer: 1

- **Default Group Diagram:**

- **Treated Group Diagram:**
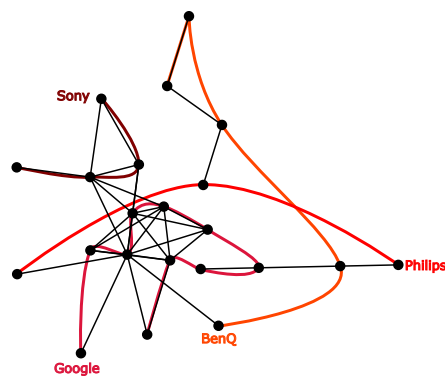
Performance question 9

SNAP dataset: 31246395
  Question: How many friends do the people with the MOST friends have?
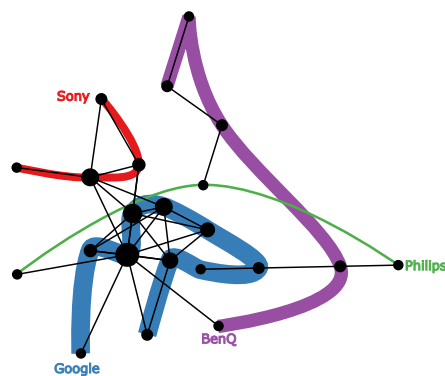
- 8
- 9
- 10
- 11

Answer: 10

- **Default Group Diagram:**

- **Treated Group Diagram:**
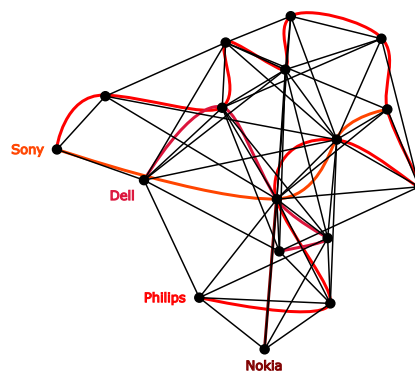
Performance question 10

SNAP dataset: 18951737

  Question: How many friends do the people with the FEWEST friends have?
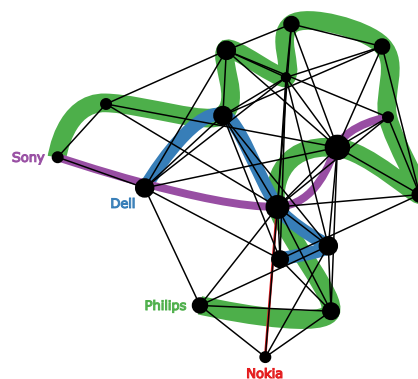
- 1
- 2
- 3
- 4

Answer: 2

- **Default Group Diagram:**

- **Treated Group Diagram:**
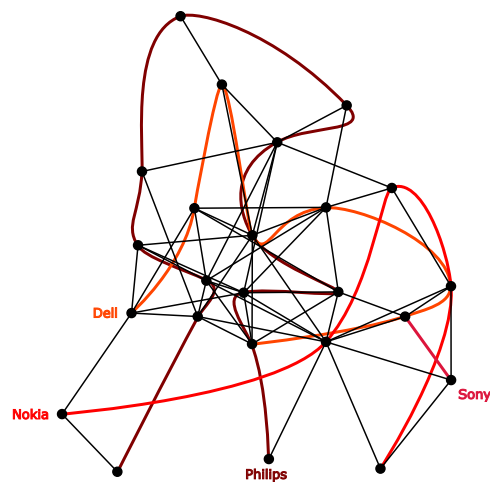
Performance question 11

SNAP dataset: 77843323

Question: How many people who bought SONY also bought DELL?
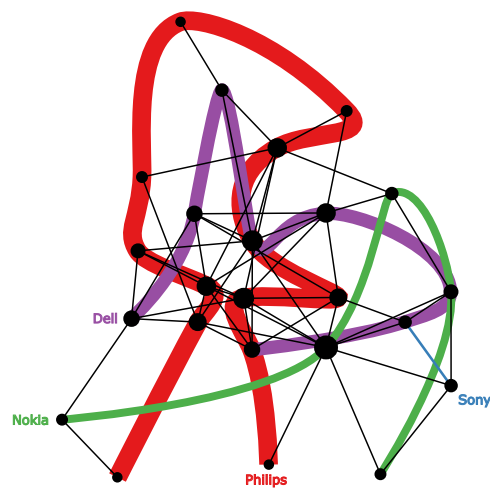
- 0
- 1
- 2
- 3

Answer: 1

- **Default Group Diagram:**

- **Treated Group Diagram:**
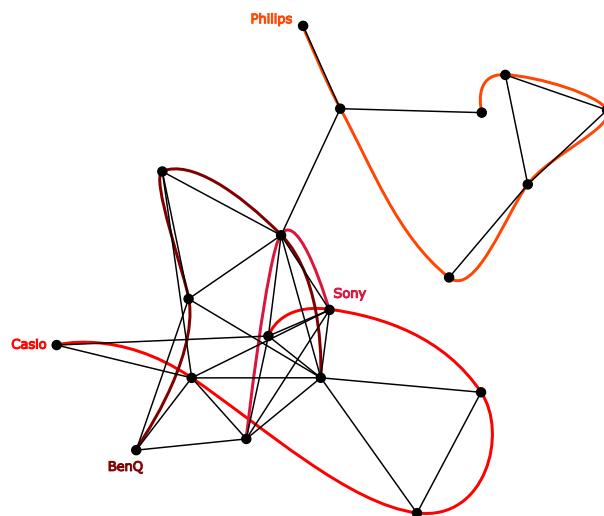
Performance question 12

SNAP dataset: 3245291
  Question: How many friends do the people with the MOST friends have?
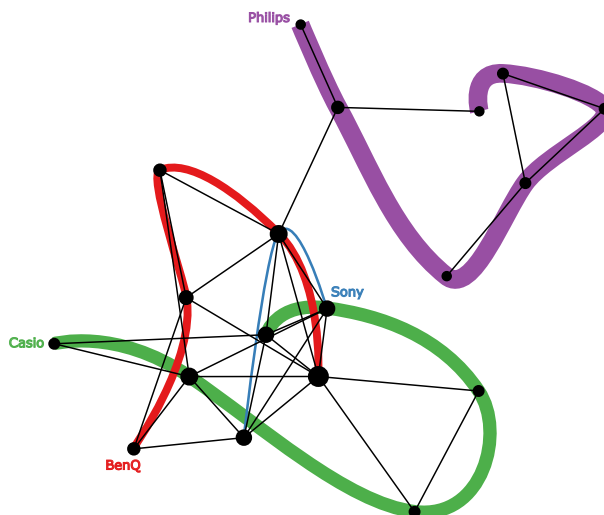
- 6
- 7
- 8
- 9

Answer: 8

- **Default Group Diagram:**

- **Treated Group Diagram:**
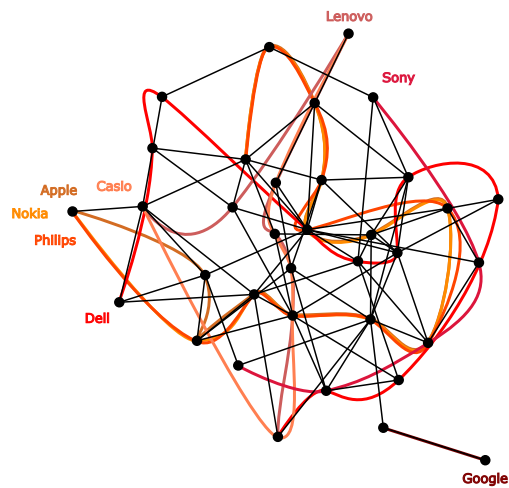
Performance question 13

SNAP dataset:
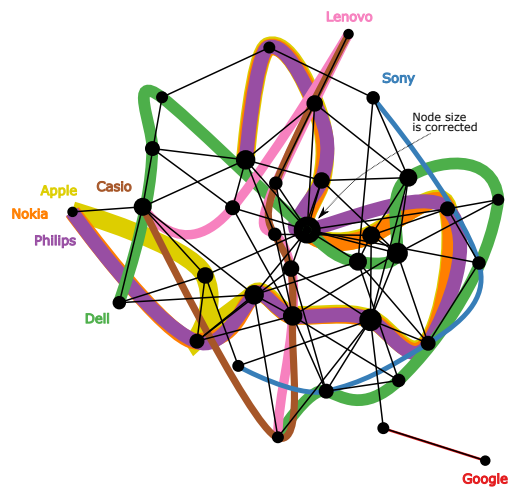 **Question:** Which product was bought the FEWEST times?

- Nokia
- Google
- Sony
- Casio

Answer: Sony

- **Default Group Diagram:**

- **Treated Group Diagram:**
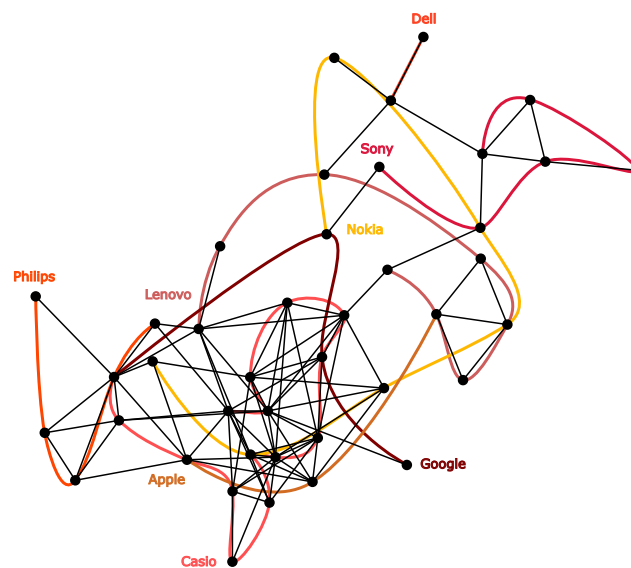
Performance question 14

SNAP dataset: 37977732

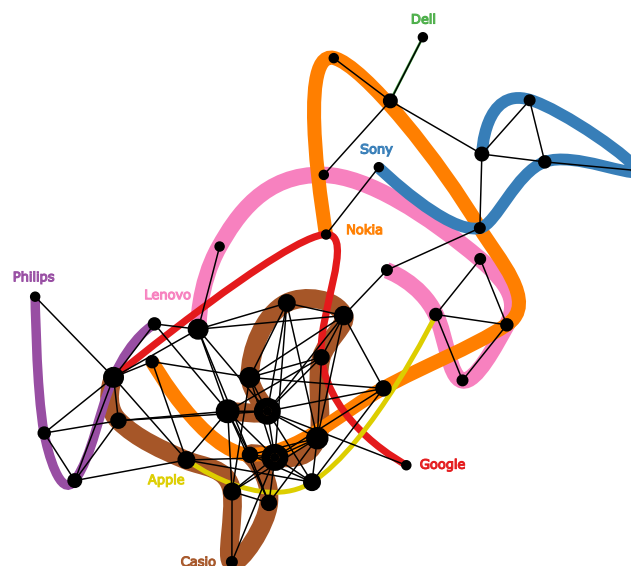**Question:** Which product was bought the MOST times?

- Philips
- Nokia
- Sony
- Casio

Answer: Casio

- **Default Group Diagram:**

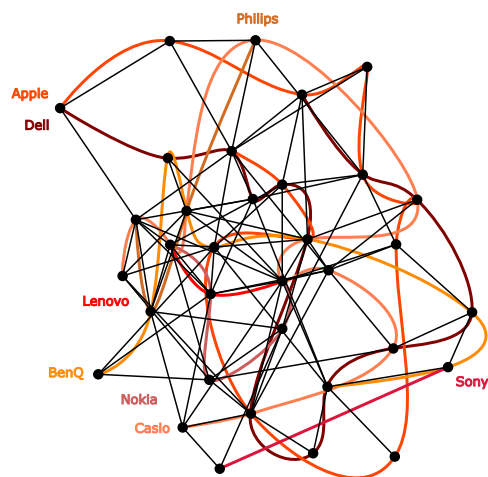- **Treated Group Diagram:**

Performance question 15

SNAP dataset: 307458983

Question: How many friends do the people with the FEWEST friends have?
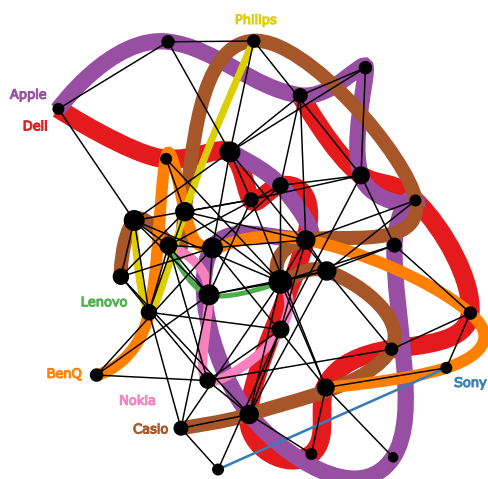
- 1
- 2
- 3
- 4

Answer: 1

- **Default Group Diagram:**

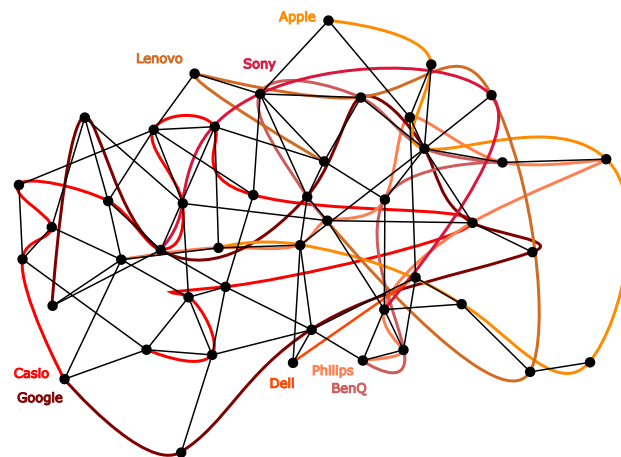- **Treated Group Diagram:**

Performance question 16

SNAP dataset: 187744415

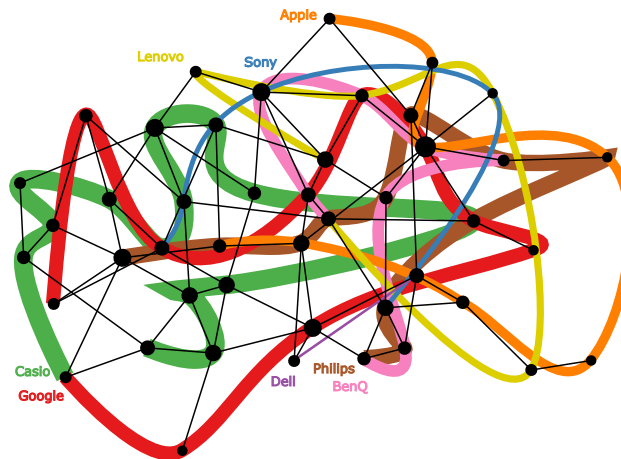   **Question:** Which product was bought the MOST times?

- Google
- Sony
- BenQ
- Casio

Answer: Casio

- **Default Group Diagram:**

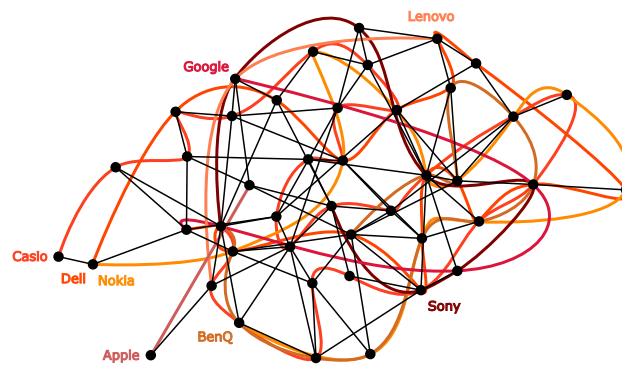- **Treated Group Diagram:**

Performance question 17

Task Type: Control Sets
   Question: How many other brands were bought by people who have GOOGLE?
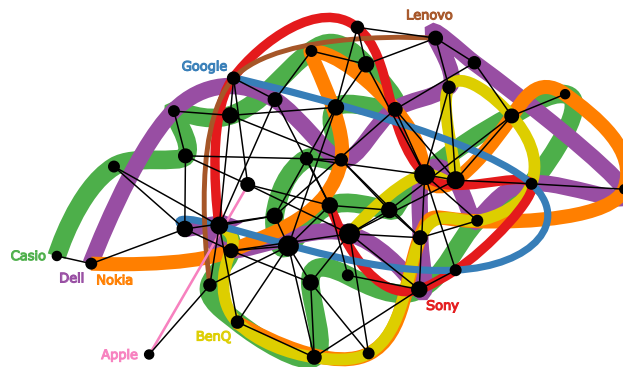
- 5
- 6
- 7
- 8

Answer: 5

- **Default Group Diagram:**

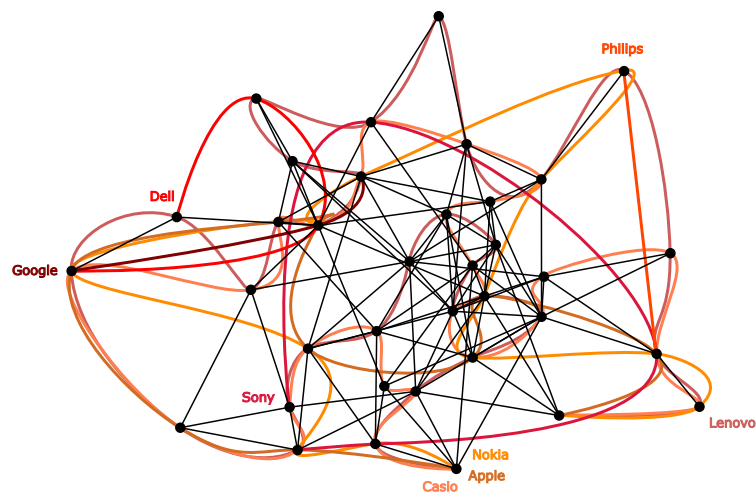- **Treated Group Diagram:**

Performance question 18

SNAP dataset: 31610343

Question: How many friends do the people with the MOST friends have?

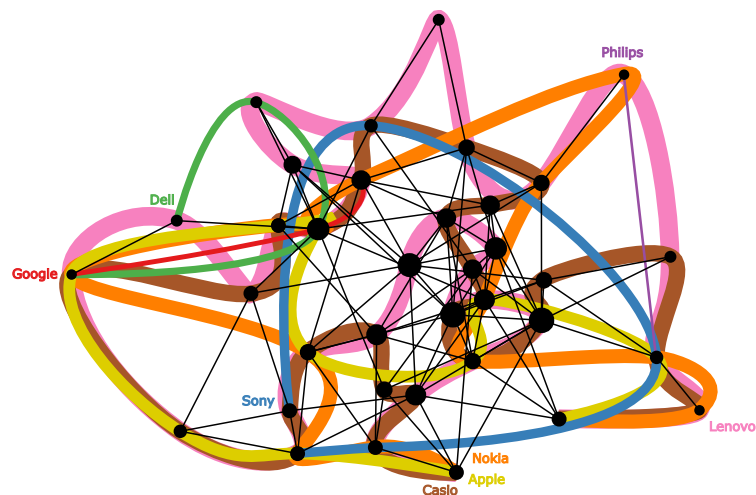- 10
- 11
- 12
- 13

Answer: 12

- **Default Group Diagram:**

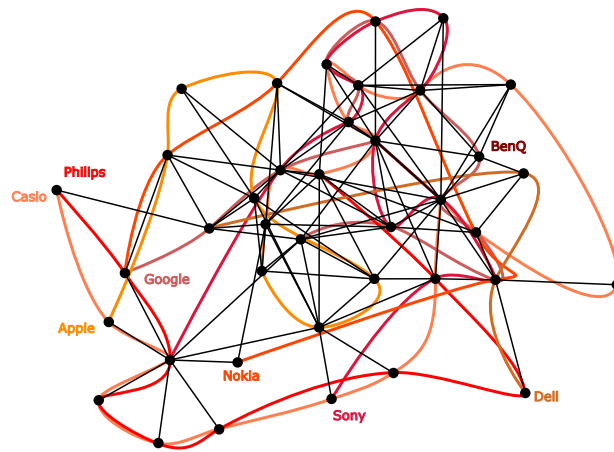- **Treated Group Diagram:**

Performance question 19

SNAP dataset: 307458983

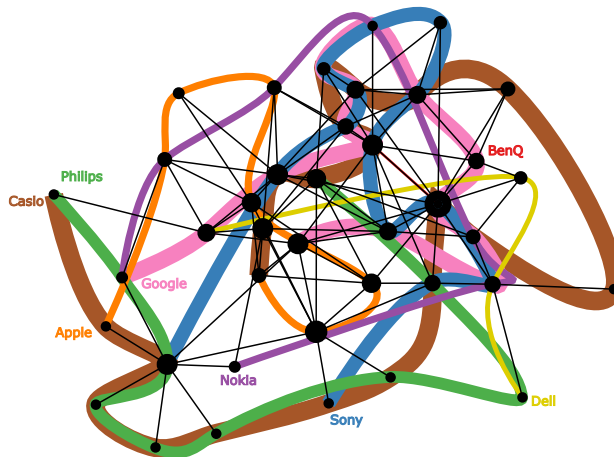Question: How many friends do the people with the MOST friends have?

- 9
- 10
- 11
- 12

Answer: 12

- **Default Group Diagram:**

- **Treated Group Diagram:**
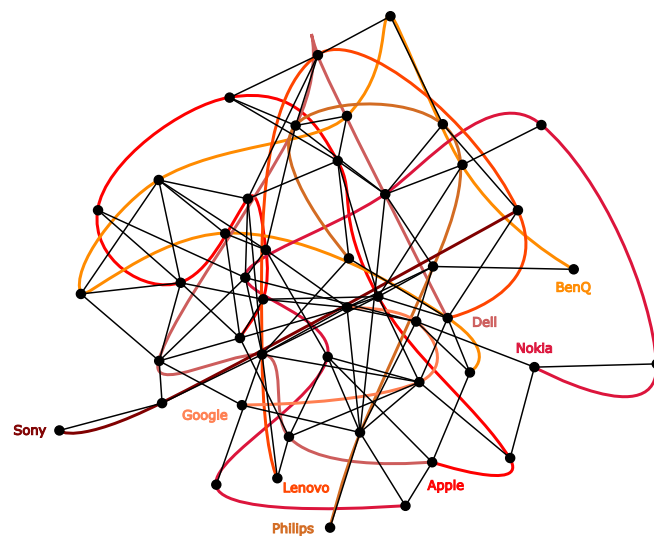
Performance question 20

SNAP dataset: 114885421

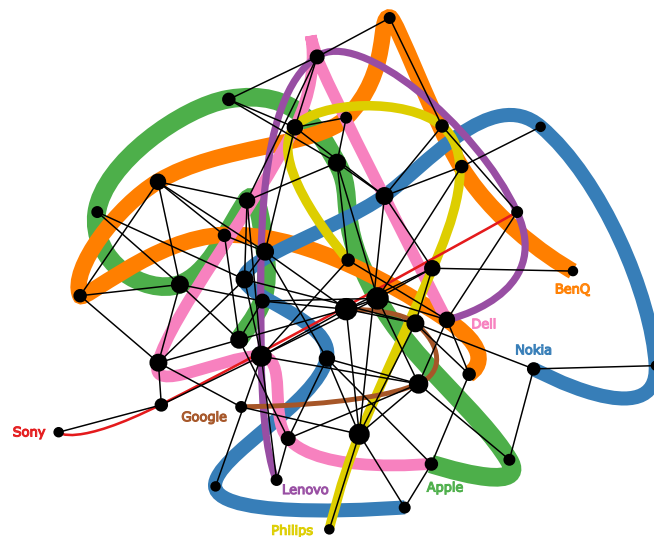Question: How many people who bought BenQ also bought DELL?

- 0
- 1
- 2
- 3

Answer: 2

- **Default Group Diagram:**

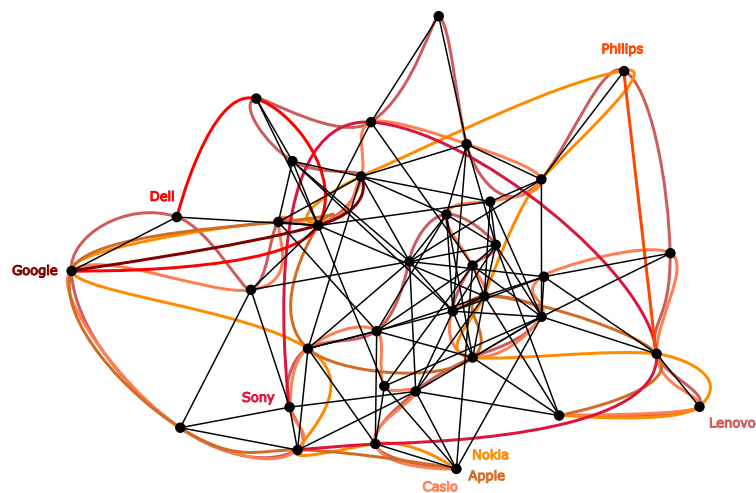- **Treated Group Diagram:**

Performance question 21

SNAP dataset: 216843160
   Question: How many friends does the person with the FEWEST friends have?
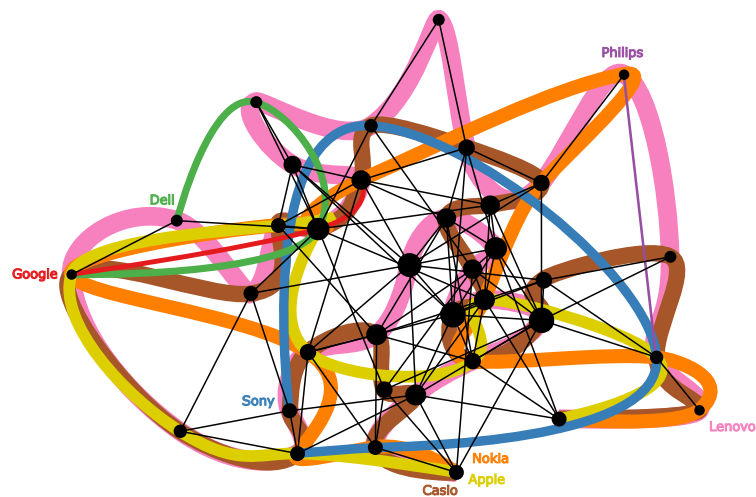
- 0
- 1
- 2
- 3

Answer: 1

- **Default Group Diagram:**

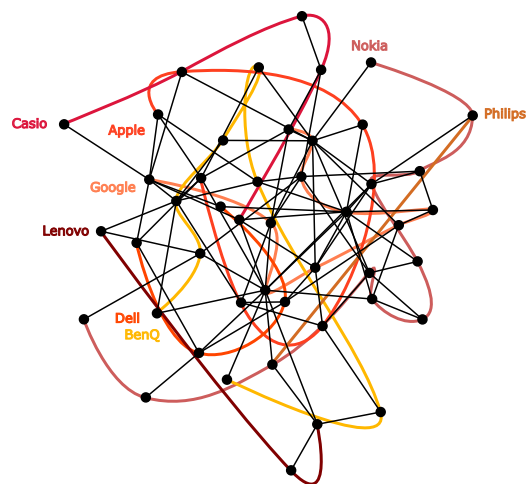- **Treated Group Diagram:**

Performance question 22

SNAP dataset: 11348282

   Question: How many other brands were bought by people who have CASIO?
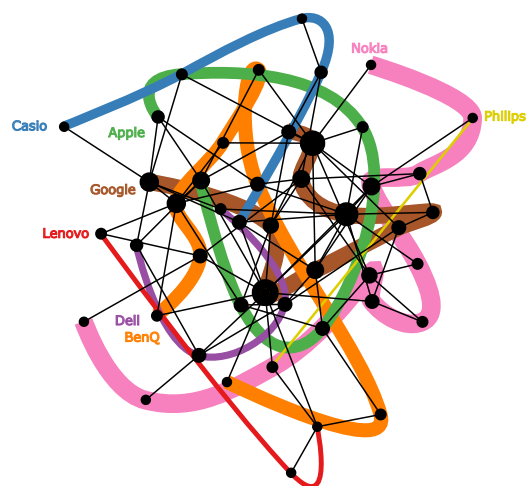
- 1
- 2
- 3
- 4

Answer: 3

- **Default Group Diagram:**

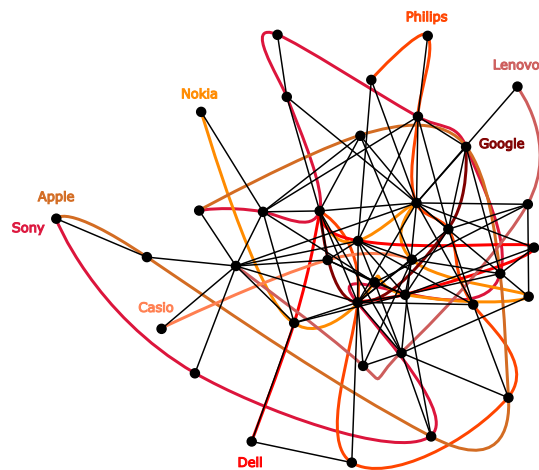- **Treated Group Diagram:**

Performance question 23

SNAP dataset: 174285878

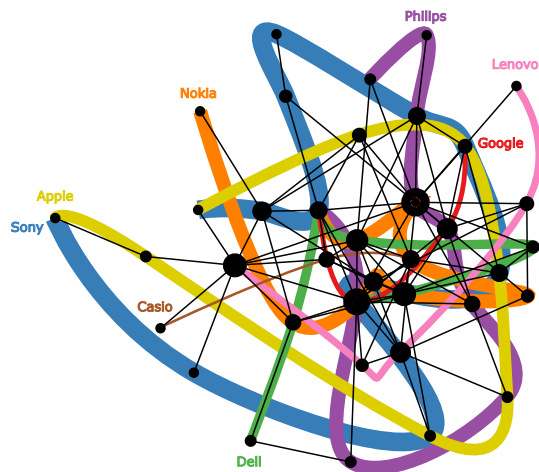**Question:** Which product was bought the FEWEST times?

- Sony
- Google
- Dell
- Casio

Answer: 1

- **Default Group Diagram:**

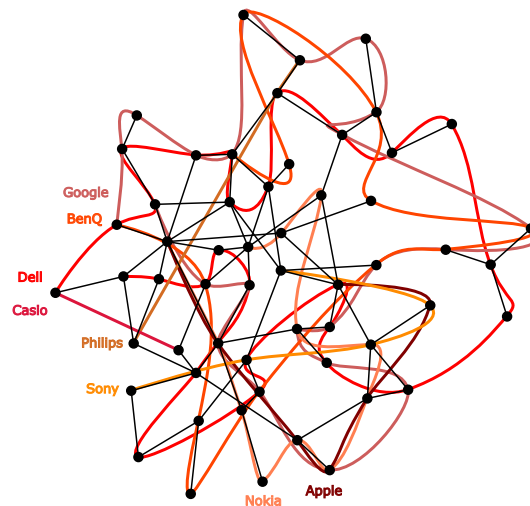

- **Treated Group Diagram:**

Performance question 24

SNAP dataset: 18270489

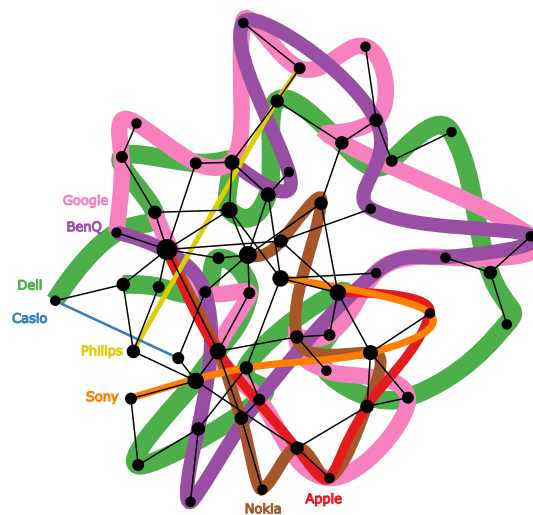Question: How many people who bought NOKIA also bought APPLE?

- 3
- 4
- 5
- 6

Answer: 0

- **Default Group Diagram:**

- **Treated Group Diagram:**

**4. Diagrams and Questions used to Collect Preference Data in Automated Layouts Experiment**

Questions:

(1) Indicate your preferred diagram with respect to your aesthetic preference.

Indicate which diagram you prefer with respect to its suitability to answering the following question:

(2) Which product was bought the MOST times?
(3) Which product was bought the FEWEST times?
(4) How many friends do the people with the MOST friends have?
(5) How many friends do the people with the FEWEST friends have?
(6) How many people who bought Nokia also bought Sony?
(7) How many other brands were bought by people who have Apple?

- **Equal Thickness Preference Diagram:**
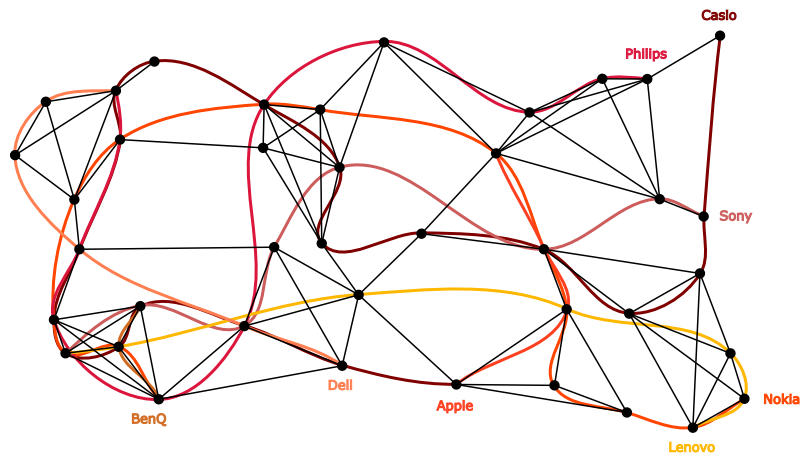
- **Varying Thickness Preference Diagram:**