

IS 1  
IS 2  
IS 3  
IS 4  
IS 5  
IS 6  
IS 7

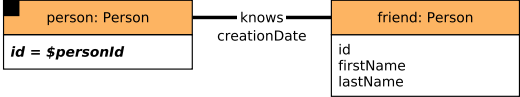
Interactive / short / 1

|         |   |                    |          |   |  |
|---------|---|--------------------|----------|---|--|
| query   | Interactive / short / 1   |                    |          |   |  |
| title   | Profile of a person   |                    |          |   |  |
| pattern | <pre>graph LR     Person["person: Person<br/>id = \$personId<br/>firstName<br/>lastName<br/>birthday<br/>locationIP<br/>browserUsed<br/>gender<br/>createDate"] -- isLocatedIn --&gt; City["city: City<br/>id"]</pre> |                    |          |   |  |
| desc.   | Given a start Person, retrieve their first name, last name, birthday, IP address, browser, and city of residence.   |                    |          |   |  |
| params  | 1   | personId           | ID       |   |  |
| result  | 1   | person.firstName   | String   | R |  |
|         | 2   | person.lastName    | String   | R |  |
|         | 3   | person.birthday    | Date     | R |  |
|         | 4   | person.locationIP  | String   | R |  |
|         | 5   | person.browserUsed | String   | R |  |
|         | 6   | city.id            | ID       | R |  |
|         | 7   | person.gender      | String   | R |  |
|         | 8   | person.createDate  | DateTime | R |  |

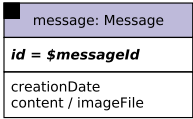
## Interactive / short / 2

|      |         |   |   |          |   |
|------|---------|---|---|----------|---|
| IS 1 | query   | Interactive / short / 2   |   |          |   |
| IS 2 | title   | Recent messages of a person   |   |          |   |
| IS 3 | pattern |   |   |          |   |
| IS 4 | desc.   | <p>Given a start Person, retrieve the last 10 Messages created by that user. For each Message, return that Message, the original Post in its conversation (post), and the author of that Post (originalPoster). If any of the Messages is a Post, then the original Post (post) will be the same Message, i.e. that Message will appear twice in that result.</p> |   |          |   |
| IS 5 | params  | 1   | personId  | ID       |   |
| IS 6 | result  | 1   | message.id  | ID       | R |
| IS 7 |         | 2   | message.content or<br>message.imageFile (for<br>photos) | Text     | R |
|      |         | 3   | message.creationDate                                    | DateTime | R |
|      |         | 4   | post.id   | ID       | R |
|      |         | 5   | originalPoster.id                                       | ID       | R |
|      |         | 6   | originalPoster.firstName                                | String   | R |
|      |         | 7   | originalPoster.lastName                                 | String   | R |
|      | sort    | 1   | message.creationDate                                    | ↓        |   |
|      |         | 2   | message.id  | ↓        |   |

### Interactive / short / 3

|      |         |   |                    |          |   |
|------|---------|---|--------------------|----------|---|
| IS 1 | query   | Interactive / short / 3   |                    |          |   |
| IS 2 | title   | Friends of a person   |                    |          |   |
| IS 3 | pattern |               |                    |          |   |
| IS 4 |         |   |                    |          |   |
| IS 5 |         |   |                    |          |   |
| IS 6 |         |   |                    |          |   |
| IS 7 |         |   |                    |          |   |
|      | desc.   | Given a start Person, retrieve all of their friends, and the date at which they became friends. |                    |          |   |
|      | params  | 1   | personId           | ID       |   |
|      | result  | 1   | friend.id          | ID       | R |
|      |         | 2   | friend.firstName   | String   | R |
|      |         | 3   | friend.lastName    | String   | R |
|      |         | 4   | knows.creationDate | DateTime | R |
|      | sort    | 1   | knows.creationDate | ↓        |   |
|      |         | 2   | friend.id          | ↑        |   |

### Interactive / short / 4

|      |         |   |   |          |   |
|------|---------|---|---|----------|---|
| IS 1 | query   | Interactive / short / 4   |   |          |   |
| IS 2 | title   | Content of a message  |   |          |   |
| IS 3 | pattern |  |   |          |   |
| IS 4 |         |   |   |          |   |
| IS 5 |         |   |   |          |   |
| IS 6 |         |   |   |          |   |
| IS 7 |         |   |   |          |   |
|      | desc.   | Given a Message, retrieve its content and creation date.                            |   |          |   |
|      | params  | 1   | messageId   | ID       |   |
|      | result  | 1   | message.creationDate                                    | DateTime | R |
|      |         | 2   | message.content or<br>message.imageFile (for<br>photos) | Text     | R |

### Interactive / short / 5

|      |         |   |                  |        |   |
|------|---------|---|------------------|--------|---|
| IS 1 | query   | Interactive / short / 5   |                  |        |   |
| IS 2 | title   | Creator of a message  |                  |        |   |
| IS 3 | pattern |  <pre> graph LR     message["message: Message&lt;br/&gt;id = \$messageId"] -- hasCreator --&gt; person["person: Person&lt;br/&gt;id&lt;br/&gt;firstName&lt;br/&gt;lastName"]           </pre> |                  |        |   |
| IS 4 |         |   |                  |        |   |
| IS 5 |         |   |                  |        |   |
| IS 6 |         |   |                  |        |   |
| IS 7 | desc.   | Given a Message, retrieve its author.   |                  |        |   |
|      | params  | 1   | messageId        | ID     |   |
|      | result  | 1   | person.id        | ID     | R |
|      |         | 2   | person.firstName | String | R |
|      |         | 3   | person.lastName  | String | R |

### Interactive / short / 6

|      |         |   |                     |             |   |
|------|---------|---|---------------------|-------------|---|
| IS 1 | query   | Interactive / short / 6   |                     |             |   |
| IS 2 | title   | Forum of a message  |                     |             |   |
| IS 3 | pattern |  <pre> graph TD     message["message: Message&lt;br/&gt;id = \$messageId"] -- replyOf*0.. --&gt; Post["Post"]     Post -- containerOf --&gt; forum["forum: Forum&lt;br/&gt;id&lt;br/&gt;title"]     forum -- hasModerator --&gt; moderator["moderator: Person&lt;br/&gt;id&lt;br/&gt;firstName&lt;br/&gt;lastName"]           </pre> |                     |             |   |
| IS 4 |         |   |                     |             |   |
| IS 5 |         |   |                     |             |   |
| IS 6 |         |   |                     |             |   |
| IS 7 | desc.   | Given a Message, retrieve the Forum that contains it and the Person that moderates that Forum. Since Comments are not directly contained in Forums, for Comments, return the Forum containing the original Post in the thread which the Comment is replying to.   |                     |             |   |
|      | params  | 1   | messageId           | ID          |   |
|      | result  | 1   | forum.id            | ID          | R |
|      |         | 2   | forum.title         | Long String | R |
|      |         | 3   | moderator.id        | ID          | R |
|      |         | 4   | moderator.firstName | String      | R |
|      |         | 5   | moderator.lastName  | String      | R |

## Interactive / short / 7

IS 1  
IS 2  
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IS 7

|         |   |                       |          |   |
|---------|---|-----------------------|----------|---|
| query   | Interactive / short / 7   |                       |          |   |
| title   | Replies of a message  |                       |          |   |
| pattern | <pre> graph TD     msg["message: Message<br/>id = \$messageId"]     comment["comment: Comment<br/>id<br/>content<br/>creationDate"]     msgAuthor["messageAuthor: Person"]     replyAuthor["replyAuthor: Person<br/>id<br/>firstName<br/>lastName"]     msg -- hasCreator --&gt; msgAuthor     comment -- replyOf --&gt; msg     comment -- hasCreator --&gt; replyAuthor     msgAuthor -.-&gt; «opt» knows  replyAuthor         </pre> |                       |          |   |
| desc.   | <p>Given a Message, retrieve the (1-hop) Comments that reply to it.</p> <p>In addition, return a boolean flag <code>knows</code> indicating if the author of the reply (<code>replyAuthor</code>) knows the author of the original message (<code>messageAuthor</code>). If author is same as original author, return <code>False</code> for <code>knows</code> flag.</p>   |                       |          |   |
| params  | 1   | messageId             | ID       |   |
| result  | 1   | comment.id            | ID       | R   |
|         | 2   | comment.content       | Text     | R   |
|         | 3   | comment.creationDate  | DateTime | R   |
|         | 4   | replyAuthor.id        | ID       | R   |
|         | 5   | replyAuthor.firstName | String   | R   |
|         | 6   | replyAuthor.lastName  | String   | R   |
|         | 7   | knows                 | Boolean  | C<br>True if the <code>knows</code> edge exists between the <code>replyAuthor</code> and the <code>messageAuthor</code> nodes, False otherwise (including the case when the two nodes are the same) |
| sort    | 1   | comment.creationDate  | ↓        |   |
|         | 2   | replyAuthor.id        | ↑        |   |