

The Collaborative Comparison Challenge

The overall challenge is to manage companies, their factories, and devices produced by these factories. Companies own both factories and (intellectual rights to) device models. A factory supports a list of device models, and can only produce devices that conforms to (are of) a device model they support.

More specifically, a mobile phone factory produces mobile phones, and mobile phones only. A mobile phone is a device, it has an IMEI number (string) and conforms to a mobile phone model (which itself is a device model). Mobile phone models allow specific RAM size options (e.g. 2GB or 4GB).

Huawei mobile phone factories are owned by the company Huawei. These factories only produce mobile phones conforming to mobile phone models owned by Huawei. The IMEI number of such phones always starts with "001". Moreover, for purposes of quality assurance, Huawei factories keep track of devices produced by them.

Factory124 is a Huawei factory that supports producing model S400 and model S500 devices which are models owned by Huawei. Devices of the S400 model either have 4GB or 8GB of RAM. So far, the factory has only produced two devices: mobile phone S400_0001 and mobile phone S400_0002. Both phones conform to the S400 mobile model. S400_0001 has 4GBs of RAM, its IMEI is "001468723648726", while S400_0002 has 8GBs of RAM, and its IMEI is "0018768768475638".

Summarizing:

A company

- has a name

Huawei

- is a company

A factory

- produces devices
- supports a list of device models
- can only produce devices that conform to (are of) supported device models
- is owned by a company

A device

- conforms to a device model

A device model

- is owned by a company

A mobile phone model

- allows specific RAM size options

- is a device model

A mobile phone device

- conforms to a mobile phone model
- has an IMEI
- has a RAM size

A mobile phone factory

- supports mobile phone models only

A Huawei mobile factory

- supports Huawei mobile phone models only
- keeps track of a list of mobile phone devices it produced
- constrains the IMEI of the mobile phone devices produced by the factory to start with "001"

Factory124

- is a factory
- is owned by Huawei
- supports Huawei S400 and S500 mobile phone models
- produced two S400 devices (S400_0001, S400_0002)

S400

- is a mobile phone model
- has either 4GB or 8GB of RAM
- is owned by Huawei

S400_0001

- is a mobile phone device
- conforms to the S400 model
- has 4GBs of RAM
- has "001468723648726" as its IMEI

S400_0002

- is a mobile phone device
- conforms to the S400 model
- has 8GBs of RAM
- has "0018768768475638" as its IMEI