Task 4: Indexes and queries

Additional queries

List all speakers of a conference.   Allows to deliver all speakers at a glance: Will I be able to see and meet interesting speakers at the conference? Will there be well-known speakers of high relevance in my field? Provided by the Endpoints method getConferenceSpeakers().

View upcoming conferences.   See all conferences taking place in the current and the next month: Are there any interesting conferences which have not attracted my attention so far? Might there even be an available seat for them? Generally, are there any conferences currently taking place on topics I am interested in? Provided by the Endpoints method GetUpcomingConferences.

Query-related problem

The Datastore API does not support inequality filtering on more than one property. Instead, filtering for both the session type and the start time has to be done in two steps. First, two separate queries are performed, one for all non-workshop sessions and one for all sessions starting before 7pm. Second, the results of these two queries are further processed by the backend to yield those entities occuring in both queries. An efficient way to achieve this filtering in Python is to use set operations, as exemplified in getNonWorkshops():

```python
non_workshop = Session.query(Session.typeOfSession != 'workshop')
before_seven = Session.query(Session.startTime <= time(19, 0))
intersect = set([n.key.urlsafe() for n in non_workshop]
            ) & set([b.key.urlsafe() for b in before_seven])
```

Note that Python sets require hashable types, therefore the string representation of the entity keys is used here.