

Job Entity Relationship Model

An entity relationship model for Spk jobs is presented.

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Introduction

In Spk, job status and history are maintained in a relational database. This database is available for query by the MDA, and is available for update by the ASPK and CSPK. Entity relationship (ER) modeling is a fundamental technique of relational database design. This document presents the ER model for the Spk Job database.

Entity Relationship Diagram

The following diagram represents the data entities and their relationships:

- Entities are represented by boxes that are divided into sections, vertically. The name of the entity appears in the first box. A list of the most important attributes appear in the second box.
- Relationships between entities are represented by arrows:
 - The role of the relationship is indicated by text. For example, a job *has a* version.
 - The sense of the role is indicated by the direction of the arrow. In the example just cited, it is the job which has a version and not the version which has a job.
 - The multiplicity of the relationship is represented by numbers or ranges of numbers at the ends of the relationship arrow. For example, the relationship between Job and History Segment is 1-to-many. To be more specific, each job must have one or more history segments.

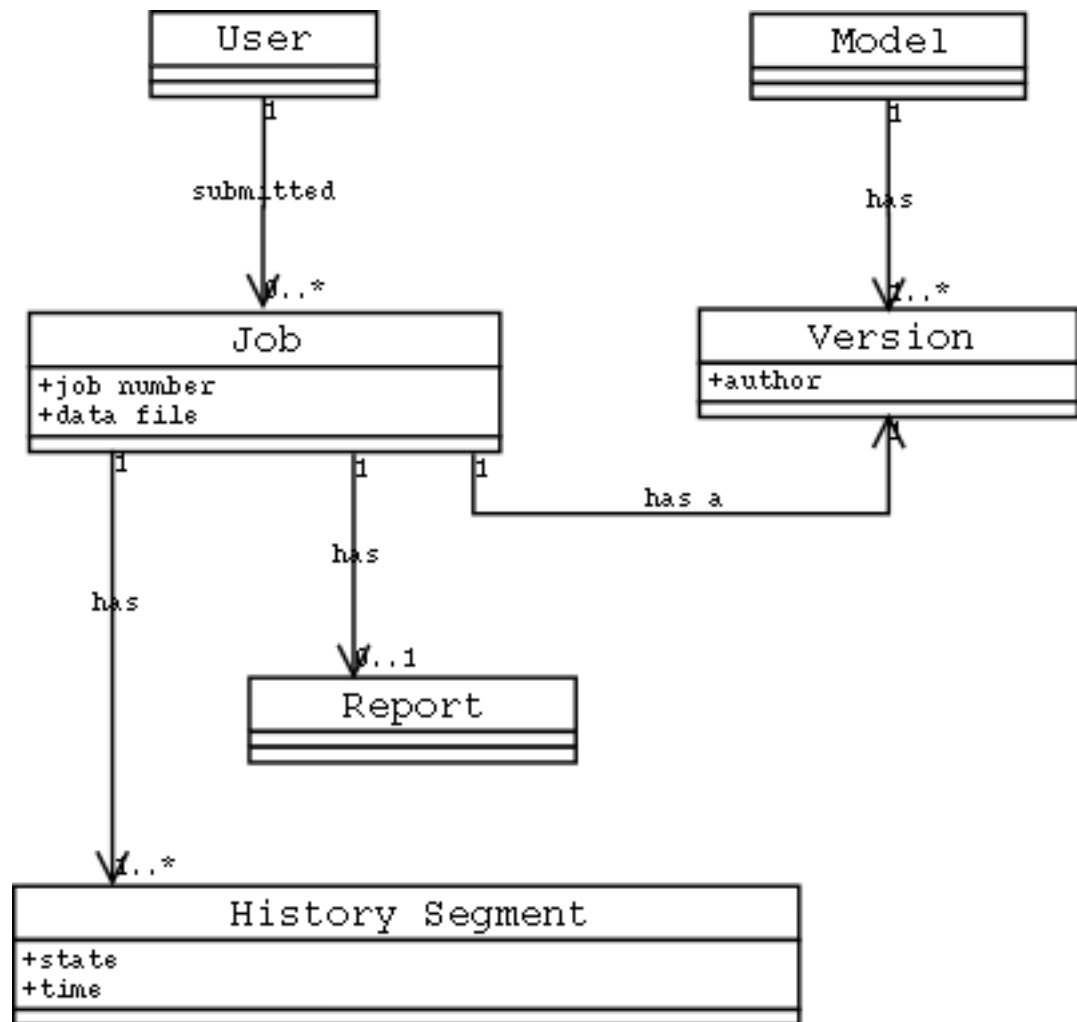


Figure 1. Entity Relationship Diagram

Entities

In this section, each entity will be described briefly. It should be noted that entities are more abstract than relational tables. Consequently, there is not a one-to-one correspondence between entities names and table names. For example, User is an entity in this model. However, Spk has a User database, in which User is the principal table. In the Job database, User is simply implemented as a foreign key.

Job

Job represents the principal unit of work for Spk. A user combines a version of a model with a data file to create a job.

History Segment

A history segment contains a state which the job assumed and the time that it entered that state. (See the Spk design document "Job History Model").

Model

Model represents the PK model created by the user with the aid of the MDA. A model is stored as a source control archive file, in rcs format.

Report

Every job creates a report before it is complete. The report is not available until the job reaches its End state (see the Spk design document "Job History Model").

User

User represents the user of Spk. The user combines a version of a model with a data file to create a job, using the MDA to submit it for processing.

Version

A model has one or more versions. A scientist creates the initial version along with its source control archive. Subsequent versions are created when an author (either the original author or another scientist) makes changes to the model and adds those changes to the model's source control archive.

