CSC343 A3

ER MODELLING AND DATABASE DESIGN

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Contents

Part I

Assumptions

1   Setup and login phase

Number of reviewers. Each conference has a fixed number of reviewers assigned per paper.

Conference participant multiplicity. Every user can participate in at most one role per conference, otherwise we have a conflict of interest. (E.g. a chair has the power to choose who gets to review a paper, so she might choose herself.)

Conference topic multiplicity. Every conference can define its own topics, or use existing topics from other conferences.

File storage. We'll only store filenames of papers, forms, and letters in the database. The files themselves will be stored on a hard drive somewhere outside the database.

2   Submission phase

Author conferencce participation. An author may have an account without being registered in any conference. She may upload a paper without submitting it to any one.

Different submissions are different papers. An author has the option to update an existing submission instead of submitting an identical copy, but that's application, not database-level design, so we don't have to worry

about that.

Author VS coauthor. We don't distinguish between authors and coauthors: everyone author of a paper is a coauthor.

3 Reviewing phase

Reviewer preference: bidding process. To bid on a paper, a reviewer expresses her level of interest by assigning an integer between 0 (low) and 5 (high).
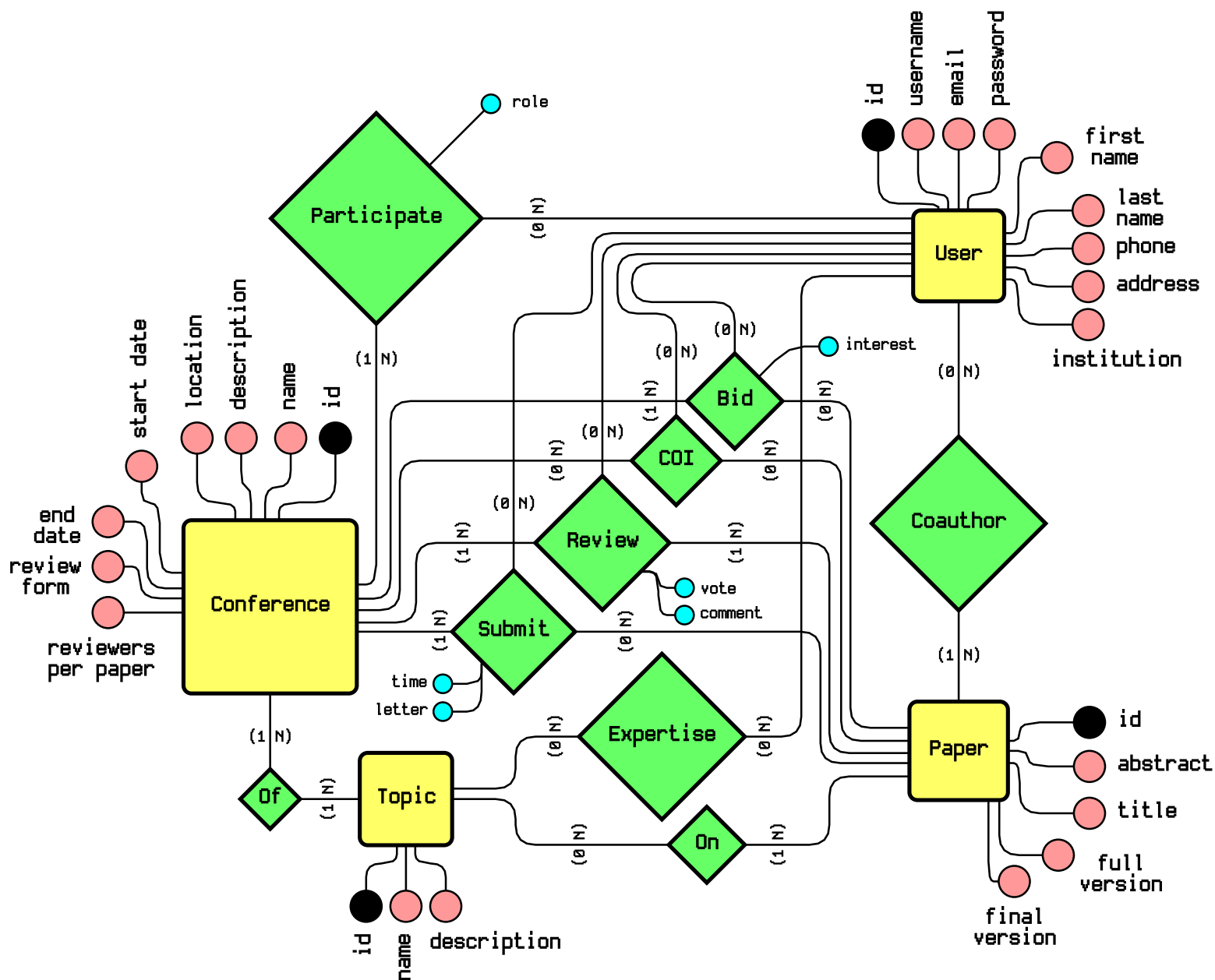
Reviewer's choice. A reviewer casts a vote of YES or NO on whether or not she thinks the paper should be published.

4 Decision and publishing phase

One letter per paper. The chair sends only one acceptance notification letter per paper, to the coauthor who submitted it.

Part II

ER diagram

Part III

Relational schema

Users (<u>ID</u>, Username, E-mail, Password, First name, Last name, Institution, Address, Phone number)

Expertise (<u>userID</u>, <u>Topic ID</u>)

Bid (<u>userID</u>, <u>Paper ID</u>, <u>Conference ID</u>, Interest)

COI (<u>userID</u>, <u>Paper ID</u>, <u>Conference ID</u>)

Review (<u>userID</u>, <u>Paper ID</u>, <u>Conference ID</u>, Vote, Comment)

Submission (<u>userID</u>, <u>Paper ID</u>, <u>Conference ID</u>, Time, Letter)

Paper (<u>Paper ID</u>, Abstract, Title, Full version, Final version)

Author (<u>Paper ID</u>, <u>userID</u>)

PaperTopic (<u>Paper ID</u>, <u>Topic ID</u>)

Conference (<u>Conference ID</u>, Name, Description, Location, Start date, End date, Review form, Reviewers per paper)

members (<u>Conference ID</u>, <u>userID</u>, Role)

ConferenceTopic (<u>Conference ID</u>, <u>Topic ID</u>)

Topic (<u>Topic ID</u>, Name, Description)

Part IV

PostgreSQL database definition

```
CREATE TABLE Conference
```

```
(
    cid                 SERIAL,
    Name                VARCHAR (255) NOT NULL,
    Description         VARCHAR (255) NOT NULL,
    Location            VARCHAR (255),
    Start_date          DATE,
    End_date            DATE,
    Review_form         VARCHAR (255), -- Link to file
    Num_reviewer        INT,
    PRIMARY KEY (cid)
);

-- users because user is a reserved word in psql
CREATE TABLE users (
    uid             INT PRIMARY KEY,
    username        VARCHAR(255) UNIQUE NOT NULL,
    email           VARCHAR(255) UNIQUE NOT NULL,
    password        VARCHAR(255) NOT NULL,
    firstname       VARCHAR(255),
    lastname        VARCHAR(255),
    institution     VARCHAR(255),
    address         VARCHAR(255),
    phone           VARCHAR(255)
);

CREATE TABLE paper (
    pid             INT PRIMARY KEY,
    abstract        TEXT NOT NULL,
    title           TEXT NOT NULL,
    full_version    VARCHAR(255), -- Links
    final_version   VARCHAR(255)
);

CREATE TABLE topic (
    tid             INT PRIMARY KEY,
    name            VARCHAR(255) NOT NULL,
    description     TEXT
);
```

```
CREATE TABLE Expertise
(
    User_id             INT,
    Topic_id            INT,
    CONSTRAINT Expertise_User FOREIGN KEY (User_id) REFERENCES Users (uid),
    CONSTRAINT Expertise_Topic FOREIGN KEY (Topic_id) REFERENCES Topic (tid),
    CONSTRAINT pk_Expertise PRIMARY KEY (User_id, Topic_id)
);

CREATE TABLE bid (
    uid             INT REFERENCES users(uid),
    pid             INT REFERENCES paper(pid),
    cid             INT REFERENCES conference(cid),
    PRIMARY KEY (uid, pid, cid)
);

CREATE TABLE coi
(
    User_id             INT NOT NULL,
    Paper_id            INT NOT NULL,
    Conference_id       INT NOT NULL,
    CONSTRAINT COI_User FOREIGN KEY (User_id) REFERENCES users (uid),
    CONSTRAINT COI_Paper FOREIGN KEY (Paper_id) REFERENCES Paper (pid),
    CONSTRAINT COI_Conference FOREIGN KEY (Conference_id)
        REFERENCES Conference (cid),
    CONSTRAINT pk_COI PRIMARY KEY (User_id, Paper_id, Conference_id)
);

CREATE TABLE review (
    uid     INT REFERENCES users(uid),
    pid     INT REFERENCES paper(pid),
    cid     INT REFERENCES conference(cid),
    vote    INT CHECK (0 <= vote AND vote <= 5),
    comment TEXT,
    PRIMARY KEY (uid, pid, cid)
);
```

```
CREATE TABLE Submission
(
    User_id             INT,
    Paper_id            INT,
    Conference_id       INT,
    Time                TIME NOT NULL,
    Letter              VARCHAR (255) NOT NULL,
    CONSTRAINT Submission_User FOREIGN KEY (User_id) REFERENCES Users (uid),
    CONSTRAINT Submission_Paper FOREIGN KEY (Paper_id) REFERENCES Paper (pid),
    CONSTRAINT Submission_Conference FOREIGN KEY (Conference_id)
    REFERENCES Conference (cid),
    CONSTRAINT pk_Submission PRIMARY KEY (User_id, Paper_id, Conference_id)
);

CREATE TABLE Author
(
    User_id             INT,
    Paper_id            INT,
    CONSTRAINT Author_User FOREIGN KEY (User_id) REFERENCES Users (uid),
    CONSTRAINT Author_Paper FOREIGN KEY (Paper_id) REFERENCES Paper (pid),
    CONSTRAINT pk_Author PRIMARY KEY (User_id, Paper_id)
);

CREATE TABLE papertopic (
    pid     INT REFERENCES paper(pid),
    tid     INT REFERENCES topic(tid),
    PRIMARY KEY (pid, tid)
);

CREATE TABLE members (
    cid     INT REFERENCES conference(cid),
    uid     INT REFERENCES users(uid),
    PRIMARY KEY (cid, uid)
);

CREATE TABLE ConferenceTopic
(
    Conference_id       INT,
```

```
    Topic_id             INT,
    CONSTRAINT Submission_Ctopic FOREIGN KEY (Conference_id)
    REFERENCES Conference (cid),
    CONSTRAINT Ctopic_Topic FOREIGN KEY (Topic_id) REFERENCES Topic (tid),
    CONSTRAINT pk_Ctopic PRIMARY KEY (Conference_id, Topic_id)
);
```