

Final Project Implementation

Mollie Echeverría

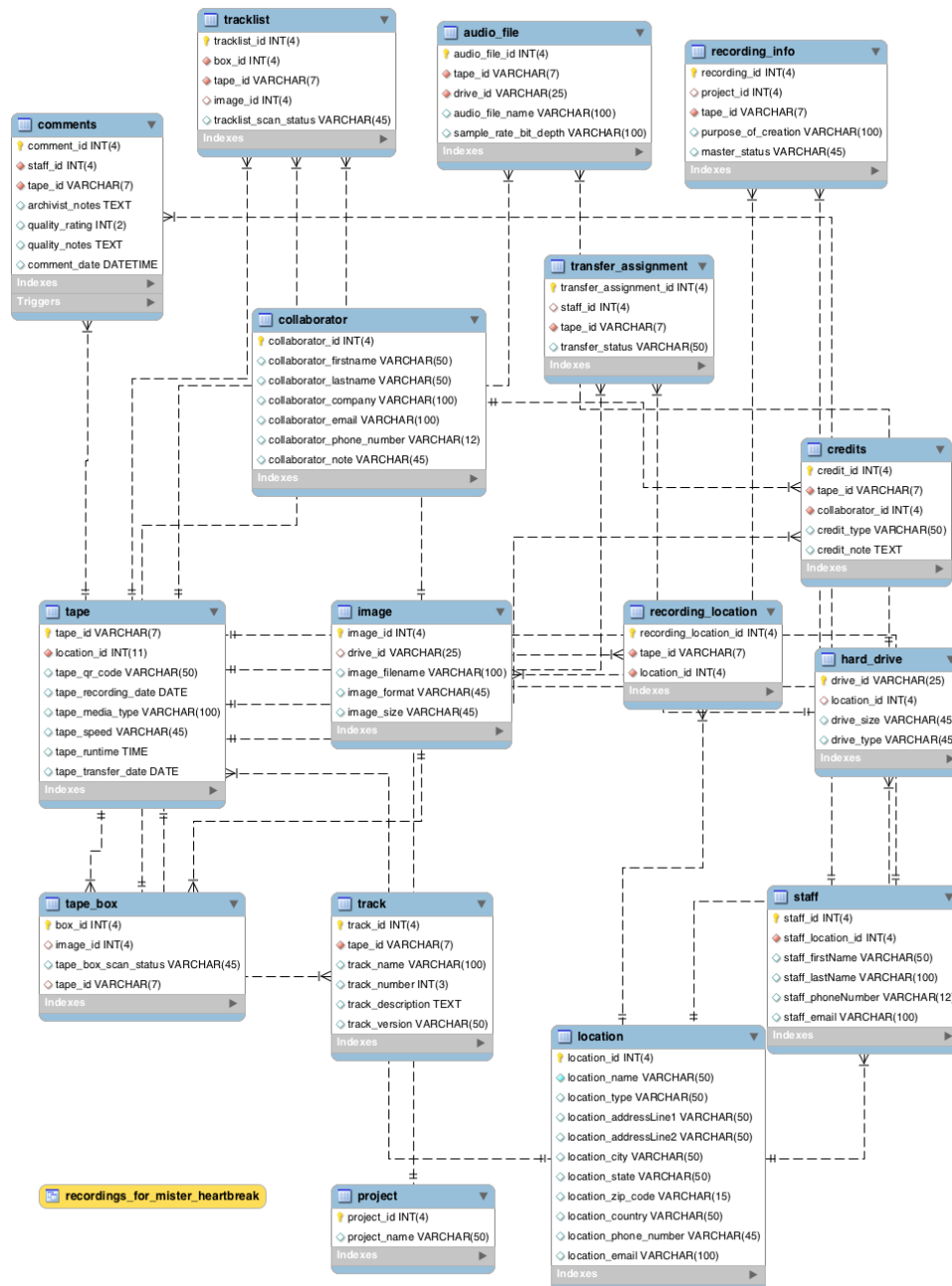
Prof. Monica Maceli

Pratt Institute

LIS-697– Database Design and Development

13 December 2016

1. An ER Diagram in Crow's Foot Notation representing your physical design, including all PK/FKs, table names, columns names, data types, and relationships. You may use Workbench to create the diagram.



2. The SQL queries used to build your physical database in its entirety, including all necessary tables, columns, column types, and primary/foreign keys and constraints.

```
CREATE SCHEMA IF NOT EXISTS `canal_st_tapes` DEFAULT CHARACTER SET utf8 ;
USE `canal_st_tapes` ;
```

```
CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`location` (
  `location_id` INT(4) NOT NULL AUTO_INCREMENT,
  `location_name` VARCHAR(50) NOT NULL,
  `location_type` VARCHAR(50) NULL DEFAULT NULL,
  `location_addressLine1` VARCHAR(50) NULL DEFAULT NULL,
  `location_addressLine2` VARCHAR(50) NULL DEFAULT NULL,
  `location_city` VARCHAR(50) NULL DEFAULT NULL,
  `location_state` VARCHAR(50) NULL DEFAULT NULL,
  `location_zip_code` VARCHAR(15) NULL DEFAULT NULL,
  `location_country` VARCHAR(50) NULL DEFAULT NULL,
  `location_phone_number` VARCHAR(45) NULL DEFAULT NULL,
  `location_email` VARCHAR(100) NULL DEFAULT NULL,
  PRIMARY KEY (`location_id`))
```

```
DEFAULT CHARACTER SET = utf8;
```

```
CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`tape` (
  `tape_id` VARCHAR(7) NOT NULL,
  `location_id` INT(11) NOT NULL,
  `tape_qr_code` VARCHAR(50) NULL DEFAULT NULL,
  `tape_recording_date` DATE NULL DEFAULT NULL,
  `tape_media_type` VARCHAR(100) NULL DEFAULT NULL,
  `tape_speed` VARCHAR(45) NULL DEFAULT NULL,
```

```

`tape_runtime` TIME NULL DEFAULT NULL,
`tape_transfer_date` DATE NULL DEFAULT NULL,
PRIMARY KEY (`tape_id`),
CONSTRAINT `location_id`
  FOREIGN KEY (`location_id`)
  REFERENCES `canal_st_tapes`.`location` (`location_id`)
  ON DELETE NO ACTION
  ON UPDATE NO ACTION)
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`hard_drive` (
  `drive_id` VARCHAR(25) NOT NULL,
  `location_id` INT(4) NULL DEFAULT NULL,
  `drive_size` VARCHAR(45) NULL DEFAULT NULL,
  `drive_type` VARCHAR(45) NULL DEFAULT NULL,
  PRIMARY KEY (`drive_id`),
  CONSTRAINT `hard_drive_fk1`
    FOREIGN KEY (`location_id`)
    REFERENCES `canal_st_tapes`.`location` (`location_id`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION)
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`audio_file` (
  `audio_file_id` INT(4) NOT NULL AUTO_INCREMENT,
  `tape_id` VARCHAR(7) NOT NULL,
  `drive_id` VARCHAR(25) NOT NULL,
  `audio_file_name` VARCHAR(100) NULL DEFAULT NULL,
  `sample_rate_bit_depth` VARCHAR(100) NULL DEFAULT NULL,
  PRIMARY KEY (`audio_file_id`),

```

```

CONSTRAINT `audio_file_fk1`
  FOREIGN KEY (`tape_id`)
  REFERENCES `canal_st_tapes`.`tape` (`tape_id`)
  ON DELETE NO ACTION
  ON UPDATE NO ACTION,
CONSTRAINT `audio_file_fk2`
  FOREIGN KEY (`drive_id`)
  REFERENCES `canal_st_tapes`.`hard_drive` (`drive_id`)
  ON DELETE NO ACTION
  ON UPDATE NO ACTION)
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`collaborator` (
  `collaborator_id` INT(4) NOT NULL AUTO_INCREMENT,
  `collaborator_firstname` VARCHAR(50) NULL DEFAULT NULL,
  `collaborator_lastname` VARCHAR(50) NULL DEFAULT NULL,
  `collaborator_company` VARCHAR(100) NULL DEFAULT NULL,
  `collaborator_email` VARCHAR(100) NULL DEFAULT NULL,
  `collaborator_phone_number` VARCHAR(12) NULL DEFAULT NULL,
  `collaborator_note` VARCHAR(45) NULL DEFAULT NULL,
  PRIMARY KEY (`collaborator_id`))
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`staff` (
  `staff_id` INT(4) NOT NULL AUTO_INCREMENT,
  `staff_location_id` INT(4) NOT NULL,
  `staff_firstName` VARCHAR(50) NULL DEFAULT NULL,
  `staff_lastName` VARCHAR(100) NULL DEFAULT NULL,
  `staff_phoneNumber` VARCHAR(12) NULL DEFAULT NULL,
  `staff_email` VARCHAR(100) NULL DEFAULT NULL,

```

```

PRIMARY KEY (`staff_id`),
CONSTRAINT `staff_location_id`
  FOREIGN KEY (`staff_location_id`)
    REFERENCES `canal_st_tapes`.`location` (`location_id`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION)
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`comments` (
  `comment_id` INT(4) NOT NULL AUTO_INCREMENT,
  `staff_id` INT(4) NOT NULL,
  `tape_id` VARCHAR(7) NOT NULL,
  `archivist_notes` TEXT NULL DEFAULT NULL,
  `quality_rating` INT(2) NULL DEFAULT NULL,
  `quality_notes` TEXT NULL DEFAULT NULL,
  `comment_date` DATETIME NULL DEFAULT NULL,
  PRIMARY KEY (`comment_id`),
  CONSTRAINT `staff_id`
    FOREIGN KEY (`staff_id`)
      REFERENCES `canal_st_tapes`.`staff` (`staff_id`)
      ON DELETE NO ACTION
      ON UPDATE NO ACTION,
  CONSTRAINT `tape_id`
    FOREIGN KEY (`tape_id`)
      REFERENCES `canal_st_tapes`.`tape` (`tape_id`)
      ON DELETE NO ACTION
      ON UPDATE NO ACTION)
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`credits` (

```

```

`credit_id` INT(4) NOT NULL AUTO_INCREMENT,
`tape_id` VARCHAR(7) NOT NULL,
`collaborator_id` INT(4) NOT NULL,
`credit_type` VARCHAR(50) NULL DEFAULT NULL,
`credit_note` TEXT NULL DEFAULT NULL,
PRIMARY KEY (`credit_id`),
CONSTRAINT `credits_fk1`
  FOREIGN KEY (`tape_id`)
    REFERENCES `canal_st_tapes`.`tape` (`tape_id`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION,
CONSTRAINT `credits_fk2`
  FOREIGN KEY (`collaborator_id`)
    REFERENCES `canal_st_tapes`.`collaborator` (`collaborator_id`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION)
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`image` (
  `image_id` INT(4) NOT NULL AUTO_INCREMENT,
  `drive_id` VARCHAR(25) NULL DEFAULT NULL,
  `image_filename` VARCHAR(100) NULL DEFAULT NULL,
  `image_format` VARCHAR(45) NULL DEFAULT NULL,
  `image_size` VARCHAR(45) NULL DEFAULT NULL,
  PRIMARY KEY (`image_id`),
  CONSTRAINT `image_fk1`
    FOREIGN KEY (`drive_id`)
      REFERENCES `canal_st_tapes`.`hard_drive` (`drive_id`)
      ON DELETE NO ACTION
      ON UPDATE NO ACTION)

```

```

ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`project` (
  `project_id` INT(4) NOT NULL AUTO_INCREMENT,
  `project_name` VARCHAR(50) NULL DEFAULT NULL,
  PRIMARY KEY (`project_id`))
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`recording_info` (
  `recording_id` INT(4) NOT NULL AUTO_INCREMENT,
  `project_id` INT(4) NULL DEFAULT NULL,
  `tape_id` VARCHAR(7) NOT NULL,
  `purpose_of_creation` VARCHAR(100) NULL DEFAULT NULL,
  `master_status` VARCHAR(45) NULL DEFAULT NULL,
  PRIMARY KEY (`recording_id`),
  CONSTRAINT `recording_info_fk1`
    FOREIGN KEY (`tape_id`)
      REFERENCES `canal_st_tapes`.`tape` (`tape_id`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION,
  CONSTRAINT `recording_info_fk2`
    FOREIGN KEY (`project_id`)
      REFERENCES `canal_st_tapes`.`project` (`project_id`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION)
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`recording_location` (
  `recording_location_id` INT(4) NOT NULL AUTO_INCREMENT,

```

```

`tape_id` VARCHAR(7) NOT NULL,
`location_id` INT(4) NOT NULL,
PRIMARY KEY (`recording_location_id`),
CONSTRAINT `recording_location_fk1`
    FOREIGN KEY (`tape_id`)
    REFERENCES `canal_st_tapes`.`tape` (`tape_id`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION,
CONSTRAINT `recording_location_fk2`
    FOREIGN KEY (`location_id`)
    REFERENCES `canal_st_tapes`.`location` (`location_id`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION)
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`tape_box` (
    `box_id` INT(4) NOT NULL AUTO_INCREMENT,
    `image_id` INT(4) NULL DEFAULT NULL,
    `tape_box_scan_status` VARCHAR(45) NULL DEFAULT NULL,
    `tape_id` VARCHAR(7) NULL DEFAULT NULL,
    PRIMARY KEY (`box_id`),
    CONSTRAINT `tape_box_fk1`
        FOREIGN KEY (`tape_id`)
        REFERENCES `canal_st_tapes`.`tape` (`tape_id`)
        ON DELETE NO ACTION
        ON UPDATE NO ACTION,
    CONSTRAINT `tape_box_fk2`
        FOREIGN KEY (`image_id`)
        REFERENCES `canal_st_tapes`.`image` (`image_id`)
        ON DELETE NO ACTION

```

```

    ON UPDATE NO ACTION)
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`track` (
  `track_id` INT(4) NOT NULL AUTO_INCREMENT,
  `tape_id` VARCHAR(7) NOT NULL,
  `track_name` VARCHAR(100) NULL DEFAULT NULL,
  `track_number` INT(3) NULL DEFAULT NULL,
  `track_description` TEXT NULL DEFAULT NULL,
  `track_version` VARCHAR(50) NULL DEFAULT NULL,
  PRIMARY KEY (`track_id`),
  CONSTRAINT `track_fk1`
    FOREIGN KEY (`tape_id`)
      REFERENCES `canal_st_tapes`.`tape` (`tape_id`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION)
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`tracklist` (
  `tracklist_id` INT(4) NOT NULL AUTO_INCREMENT,
  `box_id` INT(4) NOT NULL,
  `tape_id` VARCHAR(7) NOT NULL,
  `image_id` INT(4) NULL DEFAULT NULL,
  `tracklist_scan_status` VARCHAR(45) NULL DEFAULT NULL,
  PRIMARY KEY (`tracklist_id`),
  CONSTRAINT `tracklist_fk1`
    FOREIGN KEY (`box_id`)
      REFERENCES `canal_st_tapes`.`tape_box` (`box_id`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION,

```

```

CONSTRAINT `tracklist_fk2`
  FOREIGN KEY (`tape_id`)
  REFERENCES `canal_st_tapes`.`tape` (`tape_id`)
  ON DELETE NO ACTION
  ON UPDATE NO ACTION,
CONSTRAINT `tracklist_fk3`
  FOREIGN KEY (`image_id`)
  REFERENCES `canal_st_tapes`.`image` (`image_id`)
  ON DELETE NO ACTION
  ON UPDATE NO ACTION)
DEFAULT CHARACTER SET = utf8;

CREATE TABLE IF NOT EXISTS `canal_st_tapes`.`transfer_assignment` (
  `transfer_assignment_id` INT(4) NOT NULL AUTO_INCREMENT,
  `staff_id` INT(4) NULL DEFAULT NULL,
  `tape_id` VARCHAR(7) NOT NULL,
  `transfer_status` VARCHAR(50) NULL DEFAULT NULL,
  PRIMARY KEY (`transfer_assignment_id`),
  CONSTRAINT `transfer_assignment_fk1`
    FOREIGN KEY (`staff_id`)
    REFERENCES `canal_st_tapes`.`staff` (`staff_id`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION,
  CONSTRAINT `transfer_assignment_fk2`
    FOREIGN KEY (`tape_id`)
    REFERENCES `canal_st_tapes`.`tape` (`tape_id`)
    ON DELETE NO ACTION
    ON UPDATE NO ACTION)
DEFAULT CHARACTER SET = utf8;

```

3. Sample queries to do the following (at a minimum):

- a. Insert data into the database (the insert should affect multiple tables)

```
USE canal_st_tapes;

INSERT INTO credits VALUES ( NULL, 'LAA0001',

(SELECT collaborator_id FROM collaborator

WHERE collaborator_firstname='Brian' AND collaborator_lastname='Eno'),

'consultation','Oblique Strategies' );
```

- b. Delete data from your database (the delete should affect multiple tables)

```
USE canal_st_tapes;

DELETE FROM transfer_assignment

WHERE (staff_id) = (SELECT staff_id FROM staff

WHERE staff_firstName='Mollie' AND staff_lastName='Echeverria');
```

- c. Update existing data in your database (the update should affect multiple tables)

```
USE canal_st_tapes;

UPDATE credits SET credit_note='guitar?'

WHERE (collaborator_id) = (SELECT collaborator_id FROM collaborator

WHERE collaborator_firstname='Adrian' AND collaborator_lastname='Belew');
```

- d. Join two or more tables

```
USE canal_st_tapes;

SELECT r.tape_id as 'Catalog #', CONCAT(l.collaborator_firstname, ' ',

l.collaborator_lastname) AS 'Name', r.credit_type AS 'Credit',

o.location_name as 'Recording Venue', o.location_type as 'Recording Venue Type'

FROM collaborator AS l

INNER JOIN credits r ON

l.collaborator_id=r.collaborator_id
```

```

INNER JOIN recording_location c
ON r.tape_id=c.tape_id

INNER JOIN location o on
c.location_id=o.location_id WHERE r.tape_id IN (SELECT r.tape_id from collaborator
WHERE r.tape_id='LAA0007');

```

- e. A view that satisfies one of your user needs

```

USE canal_st_tapes;

CREATE VIEW recordings_for_mister_heartbreak AS

SELECT p.project_name as 'Project', ri.tape_id AS 'Tape #', t.track_name as 'Track
Name', t.track_number as 'Track Number', ri.purpose_of_creation as 'Track Type',
ri.master_status as 'Master', t.track_description as 'Description', t.track_version as
'Version'
FROM recording_info AS ri
INNER JOIN project p on ri.project_id=p.project_id
INNER JOIN track t on ri.tape_id=t.tape_id WHERE
p.project_name IN (SELECT p.project_name FROM project WHERE
p.project_name='Mister Heartbreak');

```

- f. A transaction

```

SET autocommit=0;
START TRANSACTION;

UPDATE comments set archivist_notes=NULL where archivist_notes='None';
UPDATE comments set quality_notes=NULL where quality_notes="";
UPDATE recording_info set purpose_of_creation=NULL where purpose_of_creation="";
UPDATE recording_info set master_status=NULL where master_status="";
COMMIT;

```

- g. A trigger

```
USE canal_st_tapes;

CREATE TRIGGER new_comment_date BEFORE
UPDATE ON comments FOR EACH ROW SET
NEW.comment_date=NOW();
```

- h. A query with a subquery

```
USE canal_st_tapes;

SELECT DISTINCT(p.project_name) as 'Project', YEAR(t.tape_recording_date) as 'Year'
From tape t
INNER JOIN recording_info ri on t.tape_id=ri.tape_id
INNER JOIN project p on ri.project_id=p.project_id
WHERE tape_recording_date IN (SELECT tape_recording_date from tape where
YEAR(tape_recording_date)='1984');
```

4. One to two paragraph summary of any changes made between the design and implementation stages and your rationale for doing so.

I changed and expanded the tabular structure of my database a lot (going from ten to sixteen tables) in between my design and implementation. I created a general `Location` table, so that I could account for locations like place of employment. I noticed that some tapes were recorded at multiple locations, so the `Recording Location` table I originally had now documents this one-to-many relationship. I added a table for individual album tracks, rather than having them stored in a block of free text as they originally were, so that database users can query information about individual songs more easily. I also created additional tables for the box and tracklist of each

tape, as well as an images table, since a tape's box and tracklist are scanned separately. I also created a separate `Projects` table and added `Recording\_Info` as a junction table between it and the `Tape` table, since I realized the same musical project may be spread over multiple tapes.