Department of Computer Science

CPSC 304 Project Cover Page

Milestone	#:	2

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Group Number: ____49____

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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your e-mail address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

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Project Summary

The application represents the management of a video game award show. Aspects of the domain that we intend to model are award ceremony, the venue, the address, the awards, community awards, company sponsors, video games, downloadable content (DLC), developers, staff, and the historical data of these aspects for each year of the award show's history.

The Schema

Venue(address: char[50] (CK), name: char[50] (PK), capacity: Integer)

AwardCeremony(viewer_count: Integer, date: Date (CK), venue_name: char[50] (FK))

Staff(Phone_number: Integer (CK, Unique), Name: char[50], ID: Integer (PK), Role: char[50])

Company(name: char[50] (PK), Contact info: char[50] (CK, Unique))

VideoGame_DLC(Title: char[50] (PK), Year: Integer (PK), Videogame_title: char[50] (PK))

VideoGame(Title: char[50] (PK), Year: Integer (PK), Genre: char[20])

Livestream(<u>Url: char[50]</u> (PK), Language: char[50], Viewer_count: Integer, Name: char[50], Awardceremony date)

Award(Name: char[50] (PK), Date: Date (PK), Prize: Integer)

CommunityAward(Votes: Integer, Deadline: Date (Not Null), <u>Award_name: char[50]</u> (PK), <u>Award Year: Integer</u> (PK))

SponsoredAward(Sponsor: char[50], Award Name: char[50] (PK), Award Year: Integer (PK))

Developer(Lead Developer: char[50], Country: char[50], Website: char[50] (CK), Name: char[50] (PK))

Sponsors(Company Name: char[50] (PK), Awardceremony Date: Date (PK), Money: Integer (Not null))

Staff_AwardCeremony(staffID: Integer (PK, FK), CeremonyYearRegistered: Integer (PK,FK))

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Functional Dependencies

Venue:

Name -> Address, Capacity

AwardCeremony:

Date -> Viewer count, venue_name

Staff:

Id -> Name, Phone #, Role

Company:

name -> ContactInfo

ContactInfo -> name

Sponsors

Year, Name -> Money

LiveStream:

Url -> Name, Viewer Count, Language, AwardCeremonyDate

ViewerCount, language -> Name

Awards (CommunityAward, SponsoredAward):

Name, date -> Prize

Name, date -> Votes, Deadline

Name, date -> Sponsor

VideoGame:

Title, Year, DLC Title, DLC Year -> Genre

Title, Year -> Genre

Developer:

Name -> LeadDeveloper, country, Website

LeadDeveloper -> country

Staff_AwardCeremony:

No FDs.

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Normalization

Being in 3NF means that for every X->b, X is either a superkey for b OR b is part of a minimal key.

Venue(Address: char[50], Name: char[50] (PK), Capacity: Integer)

FDs:

Name -> Address, Capacity

X is a superkey in this case, therefore it is in 3NF.

AwardCeremony(viewerCount: Integer, Date: Date (PK), , venue name: char[50])

FDs:

Date -> Viewer count, venue name

This is a two attribute relationship, which is always in 3NF/BCNF.

Staff(Phone #: Integer (CK, Unique), Name: char[50], ID Number: Integer (PK), Role: char[50])

FDs:

Id -> Name, Phone #, Role

X is a superkey in this case, therefore it is in 3NF.

Company(name: char[50] (PK), Contact info: char[50] (CK, Unique))

FDs:

name -> ContactInfo
ContactInfo -> name

This is a two attribute relationship, which is always in 3NF/BCNF.

VideoGame_DLC(<u>Title: char[50]</u> (PK), <u>Year: Integer</u> (PK), <u>Video Game Title: char[50]</u> (PK), Video Game Year (PK))

FDs:

Title, Year, DLC Title, DLC Year -> Genre

X is a superkey in this case, therefore it is in 3NF.

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VideoGame(Title: char[50] (PK), Year: Integer (PK), Genre: char[20])

FDs:

Title, Year -> Genre

X is a superkey in this case, therefore it is in 3NF.

Livestream(Language: char[50], Viewer Count: Integer, <u>Url: char[50]</u> (PK), Name: char[50], AwardCeremonyDate: char[50])

FDs:

Url -> Name, Viewer Count, Language, AwardCeremonyDate (BCNF)
Language, AwardCeremonyDate, Name -> ViewerCount (not in BCNF)

The first FD is in 3NF because Url is a superkey.

The second FD (Language, AwardCeremonyDate, Name -> ViewerCount) is not in 3NF.

Closures:

{Url}+ = {Name, Viewer Count, Language, Url, AwardCeremonyDate} Keys: {Url}

Language, AwardCeremonyDate, Name -> ViewerCount violates BCNF, therefore we decompose on it:

 ${\tt R1}(\underline{{\tt Language}}, \underline{{\tt AwardCeremonyDate}}, \underline{{\tt Name}}, {\tt ViewerCount}), {\tt R2}({\tt Name}, {\tt Language}, \underline{{\tt Url}}, \\ {\tt AwardCeremonyDate})$

The new tables are:

LivestreamViewerCount(Language: char[50], AwardCeremonyDate: Date, Name: char[50], ViewerCount: INTEGER)

LivestreamUrl(Language: char[50], AwardCeremonyDate: Date, Name: char[50], Url: char[50])

Award(Name: char[50] (PK), Date: Date (PK), Prize: Integer)

FDs:

Name, year -> Prize

X is a superkey in this case, therefore it is in 3NF.

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CommunityAward(Votes: Integer, Deadline: Date (Not Null), <u>Award Name: char[50]</u> (PK), <u>Award Year: Integer</u> (PK))

FDs:

Award Name, Award year -> Votes, Deadline

X is a superkey in this case, therefore it is in 3NF.

SponsoredAward(Sponsor: char[50], Award Name: char[50] (PK), Award Year: Integer (PK))

FDs:

Award Name, Award year -> Sponsor

X is a superkey in this case, therefore it is in 3NF.

Developer(Lead Developer: char[50], Country: char[50], Website: char[50], Name: char[50] (PK))

FDs:

Name -> LeadDeveloper, country, Website LeadDeveloper -> country

Name is a superkey, therefore the first FD is in BCNF.

We will decompose the second FD.

Closures:

{Name}+ = {Name, LeadDeveloper, Country, Website} {LeadDeveloper}+ = {LeadDeveloper, Country}

Keys: {Name}

R1(LeadDeveloper, Country), R2(LeadDeveloper, Name, Website)

The new tables are:

DeveloperCountry(LeadDeveloper: char[50], Country: char[50])

DeveloperName(LeadDeveloper: char[50], Website: char[50], Name: char[50],)

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Sponsors(Company Name: char[50] (PK), Award Ceremony Year: Integer (PK), Money: Integer (Not null))
```

FDs:

Year, Name -> Money

X is a superkey in this case, therefore it is in 3NF.

Staff_AwardCeremony(staffID: Integer (PK, FK), AwardCeremonyDate: Date (PK,FK))

This is a two attribute relationship, which is always in 3NF/BCNF.

SQL DDL Statements

```
CREATE TABLE Venue(
      name VARCHAR(50) PRIMARY KEY,
      address VARCHAR(50),
      capacity INTEGER
);
CREATE TABLE AwardCeremony(
      viewer count INTEGER,
      date Date PRIMARY KEY,
      venue name VARCHAR(50),
      FOREIGN KEY (venue name) REFERENCES Venue(name)
             ON DELETE SET NULL
             ON UPDATE CASCADE
);
CREATE TABLE Staff(
      phone number INTEGER UNIQUE,
      name VARCHAR(50),
      id INTEGER PRIMARY KEY,
      role VARCHAR(50)
);
CREATE TABLE Company(
      name VARCHAR(50) PRIMARY KEY,
      contact info VARCHAR(100)
);
```

```
CREATE TABLE VideoGame DLC(
      title CHAR(50),
      year INTEGER,
      videogame title CHAR(50),
      videogame year INTEGER,
      PRIMARY KEY (title, year, videogame title, videogame year),
      FOREIGN KEY (videogame title, videogame year) REFERENCES VideoGame(title, year)
                          ON DELETE NO ACTION
                          ON UPDATE CASCADE
);
CREATE TABLE VideoGame(
      title VARCHAR(128),
      year INTEGER,
      genre VARCHAR(50),
      developer name VARCHAR(20),
      PRIMARY KEY (title, year),
      FOREIGN KEY (developer name) REFERENCES Developer(Name)
             ON DELETE SET NULL
             ON UPDATE CASCADE
);
CREATE TABLE LivestreamViewerCount(
      language VARCHAR(50),
      viewer_count INTEGER,
      name VARCHAR(50),
      awardceremony_date Date,
      PRIMARY KEY (language, awardceremony date, name),
      FOREIGN KEY (awardceremony date) REFERENCES AwardCeremony(date)
             ON DELETE SET NULL
             ON UPDATE CASCADE,
      FOREIGN KEY (name) REFERENCES LivestreamUrl(name)
             ON DELETE CASCADE
             ON UPDATE CASCADE,
      FOREIGN KEY (language) REFERENCES LivestreamUrl(language)
             ON DELETE CASCADE
             ON UPDATE CASCADE
);
CREATE TABLE LivestreamUrl(
      url VARCHAR(100) PRIMARY KEY,
      language VARCHAR(50),
      name VARCHAR(50),
```

```
awardceremony date Date,
      FOREIGN KEY (awardceremony date) REFERENCES AwardCeremony(Date)
             ON DELETE SET NULL
             ON UPDATE CASCADE
);
CREATE TABLE Award(
      name VARCHAR(50),
      prize INTEGER,
      date Date,
      videogame title VARCHAR(50),
      videogame year VARCHAR(50),
      PRIMARY KEY (date, name),
      FOREIGN KEY(date) REFERENCES AwardCeremony(date)
             ON DELETE CASCADE
             ON UPDATE CASCADE,
      FOREIGN KEY(videogame title, videogame year) REFERENCES VideoGame(Title, Year)
             ON DELETE NO ACTION
             ON UPDATE CASCADE
      );
CREATE TABLE CommunityAward(
      votes INTEGER,
      deadline Date,
      award_name VARCHAR(50),
      award date Date,
      PRIMARY KEY (award_name, award_date),
      FOREIGN KEY (award name, award date) REFERENCES Award(name, date)
             ON DELETE CASCADE
             ON UPDATE CASCADE
);
CREATE TABLE SponsoredAward(
      sponsor VARCHAR(50),
      award name VARCHAR(50),
      award_date Date,
      PRIMARY KEY (award name, award date),
      FOREIGN KEY (award name, award date) REFERENCES Award(name, date)
             ON DELETE CASCADE
             ON UPDATE CASCADE
);
CREATE TABLE DeveloperCountry(
```

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lead developer VARCHAR(50) PRIMARY KEY,
      country VARCHAR(50),
      FOREIGN KEY (lead developer) REFERENCES DeveloperName(lead developer)
             ON DELETE CASCADE
             ON UPDATE CASCADE
);
CREATE TABLE DeveloperName(
      lead developer VARCHAR(50),
      website VARCHAR(50),
      name VARCHAR(50) PRIMARY KEY
);
CREATE TABLE Staff AwardCeremony(
      staff id INTEGER,
      awardceremony date Date,
      PRIMARY KEY(staff id, awardceremony date),
      FOREIGN KEY(staff id) REFERENCES Staff(id),
      FOREIGN KEY(awardceremony_date) REFERENCES AwardCeremony(date)
);
CREATE TABLE Sponsors(
      company name VARCHAR(50),
      awardceremony date Date,
      money INTEGER,
      PRIMARY KEY(company name, awardceremony date),
      FOREIGN KEY(company_name) REFERENCES Company(company_name),
      FOREIGN KEY(awardceremony date) REFERENCES AwardCeremony(date)
);
```

Insert Statements

```
INSERT INTO Venue(name, address, capacity)
VALUES

('Microsoft Theater', '777 Chick Hearn Ct Los Angeles California USA', 7100),
('Zappos Theater', '3667 S Las Vegas Blvd Las Vegas USA', 7000),
('Nokia Theater Live', '230 Bird Barn Ct Los Angeles California', 3500),
('Sven Theater', '3101 Sizzlin Road Los Angeles California', 7000),
('The AXIS Theater', '3330 Palm Avenue Los Angeles California', 7100);

INSERT INTO AwardCeremony(viewer count, date, venue name)
```

```
VALUES
       (2601, '2013-12-09', 'Zappos Theater'),
       (3087, '2014-12-10', 'Sven Theater'),
       (8900, '2019-12-02', 'Nokia Theater. Live'),
       (13423, '2020-12-11', 'The Axis Theater'),
       (33683, '2021-12-09', 'Microsoft Theater'),
       (63683, '2022-12-11', 'Microsoft Theater');
INSERT INTO Staff(phone number, name, id, role)
VALUES
       (6132350112, 'Jeffrey Lovegood', 10000, 'Producer'),
       (6135550192, 'Maria Salt', 11103, 'Presentor'),
       (6223450192, 'Kamila Butter', 12103, 'Presentor'),
       (6225650177, 'John Pink', 13103, 'Presentor'),
       (6115001232, 'John Pool', 11190, 'Producer Assistant'),
       (6131110152, 'Tommy Nook', 11111, 'Marketing'),
       (2388631123, 'Lizzy Fox', 10100, 'Communications Director'),
       (6115220352, 'Marshal Pepper', 40113, 'Communications Assistant'),
       (2374442346, 'Kurl Kem', 10235, 'Communications Director'),
       (4013333452, 'Shamsem Chumlo', 12355, 'Financing Management'),
       (1232224511, 'Sam Cho', 23122, 'Security and Safety'),
       (2234422455, 'Arjun Dhaliwal', 12245, 'Internal Jury'),
       (4122320485, 'Olivia Moon', 12431, 'Internal Jury'),
       (1344422123, 'Sam Person', 12456, 'Internal Jury'),
       (141-212-0435, 'Chris Amongus', 12436, 'Internal Jury');
INSERT INTO Company(name, contact_info)
VALUES
       ('Red Bull Inc', 'sponsor@redbull.com'),
       ('Nintendo of America', 'nintendoSponsor@ntdsponsor.com'),
       ('Coca Cola Company', 'cocacolaUSA@communications.sponsor.com'),
       ('Sony', 'sony.sponsorships@sony.com'),
       ('Snapple Beverages', 'communications@snapple.com');
INSERT INTO Sponsors(company name, awardceremony date, money)
VALUES
       ('Red Bull Inc', '2013-12-09', 10000),
       ('Nintendo of America', '2014-12-10', 5000),
       ('Coca Cola Company','2019-12-02', 5000),
       ('Sony','2020-12-11', 10000),
       ('Snapple Beverages','2021-12-09', 5000),
       ('Sony','2022-12-11', 5000);
```

```
INSERT INTO LivestreamViewerCount(language, viewer count, name, awardceremony date)
VALUES
       ('English', 2521, 'Youtube', 2013),
       ('French', 1262, 'Youtube', 2013),
       ('English', 3087, 'Youtube', 2014),
       ('Polish', 1021, 'Twitch', 2019),
       ('English', 2948, 'Twitch', 2019),
       ('Spanish', 1042, 'Twitch', 2020),
       ('Portuguese', 1345, 'Twitch', 2020),
       ('English', 3423, 'Twitch', 2020),
       ('English', 6423, 'Twitch', 2021),
       ('English', 3423, 'Twitch', 2022),
       ('English', 3683, 'Youtube', 2022);
INSERT INTO LivestreamUrl(url, language, name, awardceremony date)
VALUES
       ('https://www.youtube.com/watch?v=jfKfPfyJRk/es', 'English', 'Youtube', 2013),
       ('https://www.youtube.com/watch?v=sfKfqcvJRdk/fr', 'French', 'Youtube', 2013),
       ('https://www.youtube.com/watch?v=KfPfyJRdk/en', 'English', 'Youtube', 2014),
       ('https://www.twitch.tv/GP23/pl', 'Polish', 'Twitch', 2019),
       ('https://www.twitch.tv/GA19/en', 'English', 'Twitch', 2019),
       ('https://www.twitch.tv/GS20/sp', 'Spanish', 'Twitch', 2020),
       ('https://www.twitch.tv/GP20/po', 'Portuguese', 'Twitch', 2020),
       ('https://www.twitch.tv/GA20/en', 'English', 'Twitch', 2020),
       ('https://www.twitch.tv/GA21/en', 'English', 'Twitch', 2021),
       ('https://www.twitch.tv/GA22/en', 'English', 'Twitch', 2022),
       ('https://www.youtube.com/watch?v=aPfyJRdk/en', 'English', 'Youtube', 2022);
INSERT INTO Award(name, prize, date, videogame title, videogame year)
VALUES
       ('Best Music', 5000, '2013-12-09', 'Skyrim', 2013),
       ('Best Storyline', 3000, '2014-12-10', 'Far Cry 4', 2014),
       ('Best Action', 3000, '2020-12-11', 'Sekiro', 2019),
       ('Best Art Direction', 1000, '2021-12-09', 'Death Stranding', 2021),
       ('Game of the Year', 5000, '2019-12-02', 'The Legend of Zelda: Breath of the Wild', 2018),
       ('Best Design', 1000, '2019-12-02', 'Spider-Man', 2018),
       ('Best Debut', 1000, '2020-12-11', 'God of War', 2018),
       ('Social Impact Award', 1000, '2019-12-02', 'Spider-Man', 2018),
       ('Best Technology', 5000, '2022-12-11', 'It Takes Two', 2021),
       ('Best Food', 1000, '2020-12-11', 'Assassins Creed Odyssey', 2019),
       ('Best Animation', 5000, '2019-12-02', 'Far Cry 5', 2018),
       ('Best Innovation', 5000, '2019-12-02', 'The Legend of Zelda: Breath of the Wild', 2018);
```

```
INSERT INTO CommunityAward(votes, deadline, award name, award date)
VALUES
       (2393, 2020-03-23, 'Best Action','2020-12-11'),
       (3002, 2020-03-23, 'Best Debut', '2020-12-11'),
       (3609, 2019-03-29, 'Social Impact Award', '2019-12-02'),
       (2093, 2014-03-22, 'Best Storyline', '2014-12-10'),
       (5403, 2019-03-27, 'Best Design','2019-12-02');
INSERT INTO SponsoredAward(sponsor, award name, award date)
VALUES
       ('Bose', 'Best Music', '2013-12-09'),
       ('Microsoft', 'Best Technology', '2022-12-11'),
       ('McDonalds', 'Best Food', '2020-12-11'),
       ('Adobe', 'Best Animation', '2019-12-02'),
       ('Apple', 'Best Innovation', '2019-12-02');
INSERT INTO VideoGame DLC(title, year, videogame title, videogame year)
VALUES
       ('Dawnguard', 2014, 'Skyrim', 2013),
       ('Hearthfire', 2013, 'Skyrim', 2013),
       ('Dragonborn', 2014, 'Skyrim', 2013),
       ('The Master Trials', 2019, 'The Legend of Zelda: Breath of the Wild', 2018),
       ('The Champions Ballad', 2019, 'The Legend of Zelda: Breath of the Wild', 2018);
INSERT INTO VideoGame(title, year, genre, developer name)
VALUES
       ('Skyrim', 2013, 'Action role-playing', 'Bethesda Game Studios'),
       ('Sekiro: Shadows Die Twice', 2019, 'Action-adventure', 'FromSoftware'),
       ('Death Stranding', 2021, 'Action', 'Kojima Productions'),
       ('The Legend of Zelda: Breath of the Wild', 2018, 'Action-adventure', 'Nintendo EPD'),
       ('Spider-Man', 2018, 'Action-adventure', 'Insomniac Games'),
       ('God of War', 2018, 'Action-adventure', 'Santa Monica Studio'),
       ('Assassins Creed Odyssey', 2019, 'Action role-playing', 'Ubisoft Quebec'),
       ('Far Cry 5', 2018, 'First-person shooter', 'Ubisoft Montreal'),
       ('Far Cry 4', 2014, 'First-person shooter', 'Ubisoft Montreal'),
       ('It Takes Two', 2021, 'Action-adventure', 'Insomniac Games');
INSERT INTO Staff AwardCeremony(staff id, awardceremony date)
VALUES
       (10000, '2013-12-09'),
       (10000, '2014-12-10'),
       (10000, '2019-12-02'),
```

```
(10000, '2020-12-11'),
       (10000, '2021-12-09'),
       (10000, '2022-12-11'),
       (11103, '2013-12-09'),
       (11103, '2014-12-10'),
       (11103, '2019-12-02'),
       (11103, '2020-12-11'),
       (11103, '2021-12-09'),
       (11103, '2022-12-11'),
       (12103, '2013-12-09'),
       (12103, '2014-12-10'),
       (12103, '2019-12-02'),
       (12103, '2020-12-11'),
       (12103, '2021-12-09'),
       (12103, '2022-12-11'),
       (13103, '2020-12-11'),
       (13103, '2021-12-09'),
       (13103, '2022-12-11'),
       (11190, '2021-12-09'),
       (11111, '2020-12-11'),
       (11111, '2021-12-09'),
       (10100, '2013-12-09'),
       (10100, '2014-12-10'),
       (10100, '2019-12-02'),
       (40113, '2021-12-09'),
       (40113, '2022-12-11'),
       (10235, '2014-12-10'),
       (12355, '2022-12-11'),
       (23122, '2022-12-11'),
       (12245, '2022-12-11'),
       (12431, '2022-12-11'),
       (12456, '2022-12-11'),
       (12436, '2022-12-11');
INSERT INTO DeveloperCountry(lead_developer, country)
VALUES
       ('Todd Howard', 'USA'),
       ('Hidetaka Miyazaki', 'Japan'),
       ('Hideo Kojima', 'Japan'),
       ('Shinya Takahashi', 'Japan'),
       ('Ted Price', 'Canada'),
       ('Yumi Yang', 'China'),
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```
('Andree Cossette', 'France'),
('Jason Vandenberghe', 'Germany');
```

INSERT INTO DeveloperName(lead_developer, website, name) VALUES

```
('Todd Howard', 'https://bethesdagamestudios.com/', 'Bethesda Game Studio'), ('Hidetaka Miyazaki', 'https://www.fromsoftware.jp/ww/', 'FromSoftware'), ('Hideo Kojima', 'https://kojimaproductions.jp/', 'Kojima Productions'), ('Shinya Takahashi', 'https://www.nintendo.com/en-ca/', 'Nintendo EPD'), ('Ted Price', 'https://insomniac.games/', 'Insomniac Games'), ('Yumi Yang', 'https://sms.playstation.com/', 'Santa Monica Studios'), ('Andree Cossette', 'https://quebec.ubisoft.com/en/', 'Ubisoft Quebec'), ('Jason Vandenberghe', 'https://montreal.ubisoft.com/en/', 'Ubisoft Montreal');
```

