

Project Title: GameUniverse

Team: Team008-CIF0027

Description for each entity

userinfo: holds the user information including username, password, etc.

gameinfo: holds the game information including game genre, price, etc.

developer: game developer, also stores the number of games that the developer has developed and the average metacritique score.

publisher: game publisher, also stores the number of games that the publisher has published and the average metacritique score.

xchgrate: stores the exchange rates for various currencies against USD.

Description for each relationship

review: There may be 0 to many review(s) for each game and there may be 0 to many review(s) written by each user.

favorite: There may be 0 to many user(s) that favorite each game and there may be 0 to many game(s) favored by each user.

develop: There may be 1 to many developer(s) for each game and there may be 1 to many games developed by each developer.

publish: There may be 1 to many publisher(s) for each game and there may be 1 to many games published by each publisher.

currency: There is only one currency associated with each game, and one currency can be associated with 0 to many game(s).

FD information update from Stage 3:

In general:

1. If a Relationship is one-to-many or one-to-one, then there holds an FD from one of the keys of the many-Entity to one of the keys of the one-Entity.

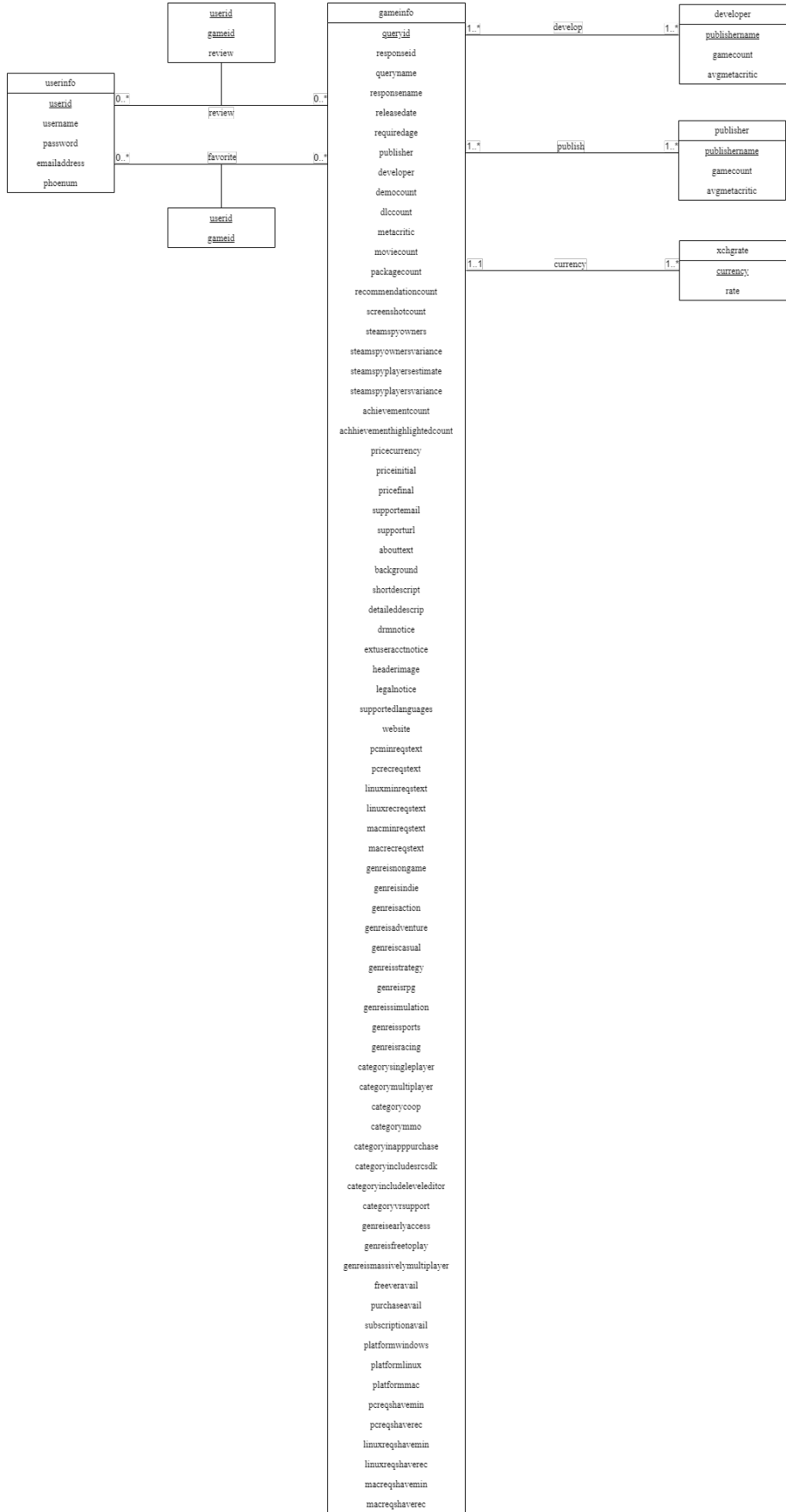
FD: gameinfo.queryid-> xchgrate.currency

2. If a Relationship has a single-valued attribute, then there holds an FD from a combination of the keys of the participating Entity to the attribute.

FD: (userinfo.userid, gameinfo.queryid)->(favorite.userid, favorite.gameid)

(userinfo.userid, gameinfo.queryid)->(review.userid, review.gamid, review.review)

UML Graph



3NF Proof Process

Our database schema adheres to 3NF itself, with the proof stated as follows:

userinfo

- FD:
 - userid -> username, password, emailaddress, phonenum
- Minimal basis:
 - userid -> username, password, emailaddress, phonenum

userid is a super key, thus relation userinfo is 3NF

gamereview

- FD:
 - userid, gameid -> review
- Minimal basis:
 - userid, gameid -> review

{userid, gameid} is a super key, thus relation gamereview is 3NF

publisher

- FD:
 - publishername -> gamecount, avgmetacritic
- Minimal basis:
 - publishername -> gamecount, avgmetacritic

publishername is a super key, thus relation publisher is 3NF

developer

- FD:
 - developername -> gamecount, avgmetacritic
- Minimal basis:
 - Developername -> gamecount, avgmetacritic

developername is a super key, thus relation developer is 3NF

xchgrate

- FD:
 - currency -> rate
- Minimal basis:
 - currency -> rate

currency is a super key, thus relation xchgrate is 3NF

gameinfo

- FD:

- queryid -> responseid, queryname, responsename, releasedate, requiredage, democount, dlccount, metacritic, moviecount, packagecount, recommendationcount, screenshotcount, steamspyowners, steamspyownersvariance, steamspyplayersestimate, steamspyplayersvariance, achievementcount, achievementhighlightedcount, pricecurrency, priceinitial, pricefinal, supportemail, supporturl, abouttext, background, shortdescrip, detaileddescrip, drmnotice, extuseracctnotice, headerimage, legalnotice, supportedlanguages, website, pccminreqstext, pccreqstext, linuxminreqstext, linuxreqstext, macminreqstext, macreqstext, genreisnongame, genreisindie, genreisaction, genreisadventure, genreiscasual, genreisstrategy, genreisrpg, genreissimulation, genreissports, genreisracing, categorysingleplayer, categorymultiplayer, categorycoop, categorymmo, categoryinapppurchase, categoryincludesrcsdk, categoryincludeleveleditor, categoryvrssupport, controllersupport, genreisearlyaccess, genreisfreetoplay, genreismassivelymultiplayer, freeveravail, purchaseavail, subscriptionavail, platformwindows, platformlinux, platformmac, pccreqshavemin, pccreqshaverec, linuxreqshavemin, linuxreqshaverec, macreqshavemin, macreqshaverec

- Minimal basis:

- queryid -> responseid, queryname, responsename, releasedate, requiredage, democount, dlccount, metacritic, moviecount, packagecount, recommendationcount, screenshotcount, steamspyowners, steamspyownersvariance, steamspyplayersestimate, steamspyplayersvariance, achievementcount, achievementhighlightedcount, pricecurrency, priceinitial, pricefinal, supportemail, supporturl, abouttext, background, shortdescrip, detaileddescrip, drmnotice, extuseracctnotice, headerimage, legalnotice, supportedlanguages, website, pccminreqstext, pccreqstext, linuxminreqstext, linuxreqstext, macminreqstext, macreqstext, genreisnongame, genreisindie, genreisaction, genreisadventure, genreiscasual, genreisstrategy, genreisrpg, genreissimulation, genreissports, genreisracing, categorysingleplayer, categorymultiplayer, categorycoop, categorymmo, categoryinapppurchase, categoryincludesrcsdk, categoryincludeleveleditor, categoryvrssupport, controllersupport, genreisearlyaccess, genreisfreetoplay, genreismassivelymultiplayer, freeveravail, purchaseavail, subscriptionavail, platformwindows, platformlinux, platformmac, pccreqshavemin, pccreqshaverec, linuxreqshavemin, linuxreqshaverec, macreqshavemin, macreqshaverec

queryid is a super key, thus relation gameinfo is 3NF

Relational Schema

Userinfo(
 userid:INT[PK],
 username:VARCHAR(16),
 password:VARCHAR(16),
 emailaddress:VARCHAR(32),
 phonenum:VARCHAR(11)
)

Gamereview(
 userid:INT [PK] [FK to userinfo.userid],
 gameid:INT [PK] [FK to gameinfo.queryid],
 review:VARCHAR(255)
)

Gameinfo(
 queryid:INT[PK],
 responseid:INT,
 queryname:VARCHAR(255),
 responsename:VARCHAR(255),
 releasedate:VARCHAR(255),
 requiredage:INT,
 democount:INT,
 dlccount:INT,
 metacritic:INT,
 moviecount:INT,
 packagecount:INT,
 recommendationcount:INT,
 screenshotcount:INT,
 steamspyowners:INT,
 steamspyownersvariance:INT,
 steamspyplayersestimate:INT,
 steamspyplayersvariance:INT,
 achievementcount:INT,
 achievementhighlightedcount:INT,
 pricecurrency:VARCHAR(10)[FK to Xchgrate.currency],
 priceinitial:DECIMAL,
 pricefinal:DECIMAL,
 supportemail:VARCHAR(32),
 supporturl:VARCHAR(255),
 abouttext:VARCHAR(255),
 background:VARCHAR(255),

shortdescrip:VARCHAR(255),
detaileddescrip:VARCHAR(255),
drmnotice:VARCHAR(255),
extuseracctnotice:VARCHAR(255),
headerimage:VARCHAR(255),
legalnotice:VARCHAR(255),
supportedlanguages:VARCHAR(255),
website:VARCHAR(255),
pcminreqstext:VARCHAR(255),
pcrecreqstext:VARCHAR(255),
linuxminreqstext:VARCHAR(255),
linuxrecreqstext:VARCHAR(255),
macminreqstext:VARCHAR(255),
macrecreqstext:VARCHAR(255),
genreisnongame:BOOLEAN,
genreisindie:BOOLEAN,
genreisaction:BOOLEAN,
genreisadventure:BOOLEAN,
genreiscasual:BOOLEAN,
genreisstrategy:BOOLEAN,
genreisrpg:BOOLEAN,
genreissimulation:BOOLEAN,
genreissports:BOOLEAN,
genreisracing:BOOLEAN,
categorysingleplayer:BOOLEAN,
categorymultiplayer:BOOLEAN,
categorycoop:BOOLEAN,
categorymmo:BOOLEAN,
categoryinapppurchase:BOOLEAN,
categoryincludesrcsdk:BOOLEAN,
categoryincludeleveleditor:BOOLEAN,
categoryvrsupport:BOOLEAN,
controllersupport:BOOLEAN,
genreisearlyaccess:BOOLEAN,
genreisfreetoplay:BOOLEAN,
genreismassivelymultiplayer:BOOLEAN,
freeveravail:BOOLEAN,
purchaseavail:BOOLEAN,
subscriptionavail:BOOLEAN,
platformwindows:BOOLEAN,
platformlinux:BOOLEAN,
platformmac:BOOLEAN,

```
    pcreqshavemin:BOOLEAN,  
    pcreqshaverec:BOOLEAN,  
    linuxreqshavemin:BOOLEAN,  
    linuxreqshaverec:BOOLEAN,  
    macreqshavemin:BOOLEAN,  
    macreqshaverec:BOOLEAN  
)
```

```
Userfavorite(  
    userid:INT [PK] [FK to userinfo.userid],  
    gameid:INT [PK] [FK to gameinfo.queryid]  
)
```

```
Publisher(  
    publishername:VARCHAR(255) [PK],  
    gamecount:INT,  
    avgmetacritic:DECIMAL  
)
```

```
Developer(  
    developername:VARCHAR(255) [PK],  
    gamecount:INT,  
    avgmetacritic:DECIMAL  
)
```

```
Publish(  
    publishername:VARCHAR(255) [PK][FK to Publisher.publishername],  
    gameid:INT[PK][FK to gameinfo.queryid],  
)
```

```
Develop(  
    developername:VARCHAR(255) [PK][FK to Developer.developername],  
    gameid:INT[PK][FK to gameinfo.queryid],  
)
```

```
Xchgrate(  
    currency:VARCHAR(10) [PK],  
    rate:DECIMAL  
)
```