

*A CAL Project Report*

on

# **Video Game Distribution System**

*to be submitted in partial fulfilling of the requirements for the course on*

**Database Management Systems – ITE 1003**

**(A1 & A2)**

by

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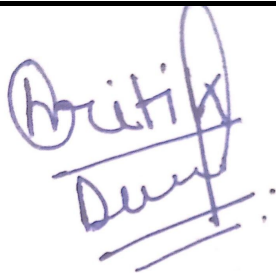
**Mohit Gupta (19BIT0055)**

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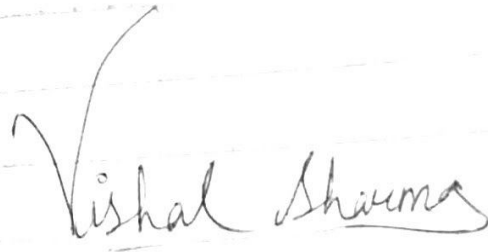
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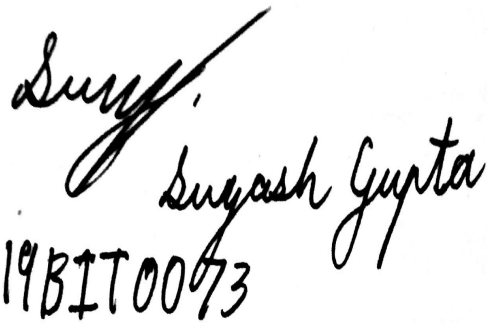


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Fall Semester 2020-2021

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## **INTRODUCTION**

### **ACKNOWLEDGEMENTS**

We would like to show our gratitude to VIT University and our chancellor G. Viswanathan sir. We sincerely thank the Dean and HOD of SITE. We are also grateful to our faculty Dr. Dharmendra Singh Rajput for his guidance throughout the project. Lastly, we thank our parents for enabling us to fulfil our dreams and goals by always standing by us.

### **Universe of Discourse**

This project stores data of an online service which sells computer games. There are two types of users we kept in mind whilst creating the database 1. Publisher: The publisher can launch or remove games, set discounts at schedules etc. 2. Customer: The customer can purchase/refund games, can view details of the games being provided etc.

### **Project Objective and Overview**

This DBMS project aims to capture a sample database system used in a game distribution system similar to steam. This will allow us to understand how a database system is used to organize the information stored for objects like games, customers, publishers etc. and how they are interrelated with each other. Such a system was chosen for our project as it would provide a simple yet robust example of how DBMS principles are used on a day to day basis for a vast array of applications.

## **REVIEW-1 (Survey & Analysis)**

### **DATA TYPES USED**

**Numeric data types such as integer & float- Stores a range of negative & positive number.**

**CHAR- It is a character and string data type with fixed string length.**

**VARCHAR - It is datatype for storing alphanumeric values in SQL with flexible size.**

**Date- Stores date in the format YYYY-MM-DD.**

**DateTime- Stores date and time information in the format YYYY-MM-DD HH:MI:S**

### **ENTITIES**

**o Publisher**

**o Customer**

**o Login**

**o Username**

**o Password**

**o Games**

**o Category(Genre of game , Recommendations )**

**o System Requirements and various types of compatibility(controller , joystick , pc only)**

**o Previous Purchases**

**o Sale**

**o Payment Gateway**

**o Developer**

### **ATTRIBUTES**

**Entities Attributes\***

**Publisher Pub\_id,name,password,email,phone**

**Customer Cust\_id,name,password,email,country,age Games**

**Game\_id,name,Pub\_id,Dev\_id,genre,rating,rqments,price,sale\_id, age\_rating,desc Sale**

**Sale\_id,offer\_percentage,sale\_shdl Previous Purchases**

**Purchase\_id,Cust\_id,Game\_id,price,date\_of\_purchase Payment Gateway**

**Game\_id,Cust\_id,Sale\_id,price,Purchase\_id,date\_of\_purchase Developer**

**Dev\_id,name,password,email,phone**

## Table Creation Queries

```
create table Publisher(  
  Publisher_ID      varchar(10)      primary KEY,  
  Publisher_Name    varchar(20),  
  Password          varchar(30),  
  Email             varchar(50),  
  Phone             varchar(10)  
);
```

## Table Creation Queries

```
create table Customer(  
  Customer_ID      varchar(10)      primary KEY,  
  Customer_Name    varchar(10),  
  Password          varchar(30),  
  Email            varchar(20),  
  Country          varchar(30),  
  Age              integer  
);
```

## Table Creation Queries

```
create table Games(  
  Game_ID          varchar(10)  primary KEY,  
  Game_Name        varchar(20),  
  Publisher_ID     varchar(10),  
  Dev_Id           varchar(10),  
  Genre            varchar(10),  
  Rating           int,  
  Requirements     varchar(20),  
  Price            float,
```

## Table Creation Queries

```
  Sale_ID          varchar(10),  
  Age_Rating       float,  
  Description       varchar(50),  
  
  FOREIGN KEY(Publisher_ID) REFERENCES  
    Publisher(Publisher_ID),  
  FOREIGN KEY(Sale_ID) REFERENCES  
    Sale(Sale_ID),  
  FOREIGN KEY(Dev_Id) REFERENCES  
    developer(Dev_Id)  
);
```

## Table Creation Queries

```
create table Sale(  
  Sale_ID          varchar(10)          primary KEY,  
  Offer_Percent    float,  
  Sale_Schedule    date  
);
```

## Table Creation Queries

```
create table Previous_Purchases(  
  Customer_ID      varchar(10),  
  Purchase_ID      varchar(10) primary key,  
  Game_ID          varchar(10),  
  Date_of_Purchase date,  
  Price            float,  
  
  FOREIGN KEY(Customer_ID)  
  REFERENCES Customer(Customer_ID)  
);
```



## Table Creation Queries continued

FOREIGN KEY(Game\_id) REFERENCES Games(Game\_ID),

FOREIGN KEY(Customer\_ID) REFERENCES  
Customer(Customer\_ID),

FOREIGN KEY(Sale\_ID) REFERENCES Sale(Sale\_ID),

FOREIGN KEY(Purchase\_ID) REFERENCES  
Previous\_Purchases(Purchase\_ID)  
);

## Table Creation Queries continued

```
create table Payment_Gateway(  
Game_ID          varchar(10),  
Customer_ID      varchar(10),  
Sale_ID          varchar(10),  
Price            float,  
Purchase_ID      varchar(10),  
Date_of_Purchase date,
```

## Table Creation Queries continued

```
create table Developer(
Dev_ID          varchar(10)  primary KEY,
Name            varchar(20),
Password        varchar(30),
Email           varchar(50),
Phone           varchar(10),
Publisher_ID     varchar(10),

foreign key(Publisher_ID)    references
Publisher(Publisher_ID));
```

## Database Schema

### ▪ Publisher

Pub_id	name	password	email	Phone
--------	------	----------	-------	-------

### ▪ Customer

Cust_id	name	password	email
---------	------	----------	-------

### ▪ Games

Game_id	name	Pub_id(fk)	Dev_id(fk)	genre	rating	rqments	price	sale_shdl
---------	------	------------	------------	-------	--------	---------	-------	-----------

### ▪ Sale

Sale_id	offer_percentage	sale_shdl
---------	------------------	-----------

### ▪ Previous Purchases

Purchase_id	Cust_id(fk)	Game_id(fk)	price	date_of_purchase
-------------	-------------	-------------	-------	------------------

### ▪ Payment Gateway

Game_id(fk)	Cust_id(pk)(fk)	Sale_id(fk)	price	Purchase_id(pk)(fk)	date_of_purchase
-------------	-----------------	-------------	-------	---------------------	------------------

### ▪ Developer

Dev_id	name	password	email	phone
--------	------	----------	-------	-------

# Database Schema (Updated)

## ▪ Publisher

Pub_id	name	password	email	Phone
--------	------	----------	-------	-------

## ▪ Customer

Cust_id	name	password	email	country	age
---------	------	----------	-------	---------	-----

## ▪ Games

Game_id	name	Pub_id	Dev_id	genre	rating	rqments	price	Age rating	desc	sale_shdl
---------	------	--------	--------	-------	--------	---------	-------	------------	------	-----------

## ▪ Sale

Sale_id	offer_percentage	sale_shdl
---------	------------------	-----------

## ▪ Previous Purchases

Purchase_id	Cust_id	Game_id	price	date_of_purchase
-------------	---------	---------	-------	------------------

## ▪ Payment Gateway

Game_id	Cust_id	Sale_id	price	Purchase_id	date_of_purchase
---------	---------	---------	-------	-------------	------------------

## ▪ Developer

Dev_id	name	password	email	phone
--------	------	----------	-------	-------

## Integrity Constraints

### **Publisher:**

**pub\_id (pk)**

**Name [composite(first,last)] (not null, unique)**

**Password (not null, unique)**

**Email (not null, unique)**

**Phone [multi-valued] (not null, unique)**

### **Customer:**

**Cust\_id (pk)**

**Name [composite] (not null, unique)**

**Password (not null, unique)**

**Email [multi-valued] (not null, unique)**

**Country**

**Age (not null)**

**Games:**

**Game\_id (pk)**

**Name (not null)**

**Pub\_id (fk)**

**Dev\_id (fk)**

**Genre [multi-valued] (not null)**

**Rating [composite(user, critic)] (check if in 0-100 range)**

**Rqments [composite(processor, graphics, RAM)] (not null)**

**Price (not null)**

**Age rating (not null) [select from set {E, E10+, 12+, 16+, 18+}]**

**Desc (not null)**

**Sale\_shdl (fk)**

**Sale:**

**Sale\_id (pk)**

**Offer\_percentage (check if in 10-100 range)**

**Sale\_shdl (not null)**

**Developer:**

**dev\_id (pk)**

**Name [composite(first,last)] (not null, unique)**

**Password (not null, unique)**

**Email (not null, unique)**

**Phone [multi-valued] (not null, unique)**

**Previous purchases:**

**Purchase\_id (pk)**

**Cust\_id (fk)**

**Game\_id (fk)**

**Price (not null)**

**date\_of\_purchase (not null)**

**Payment gateway:**

**Game\_id(fk)**

**Cust\_id(pk)(fk)**

**Sale\_id(fk)**

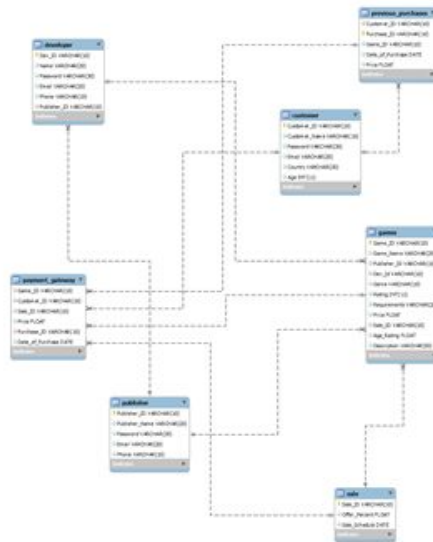
**Price (not null)**

**Purchase\_id(pk)(fk)**

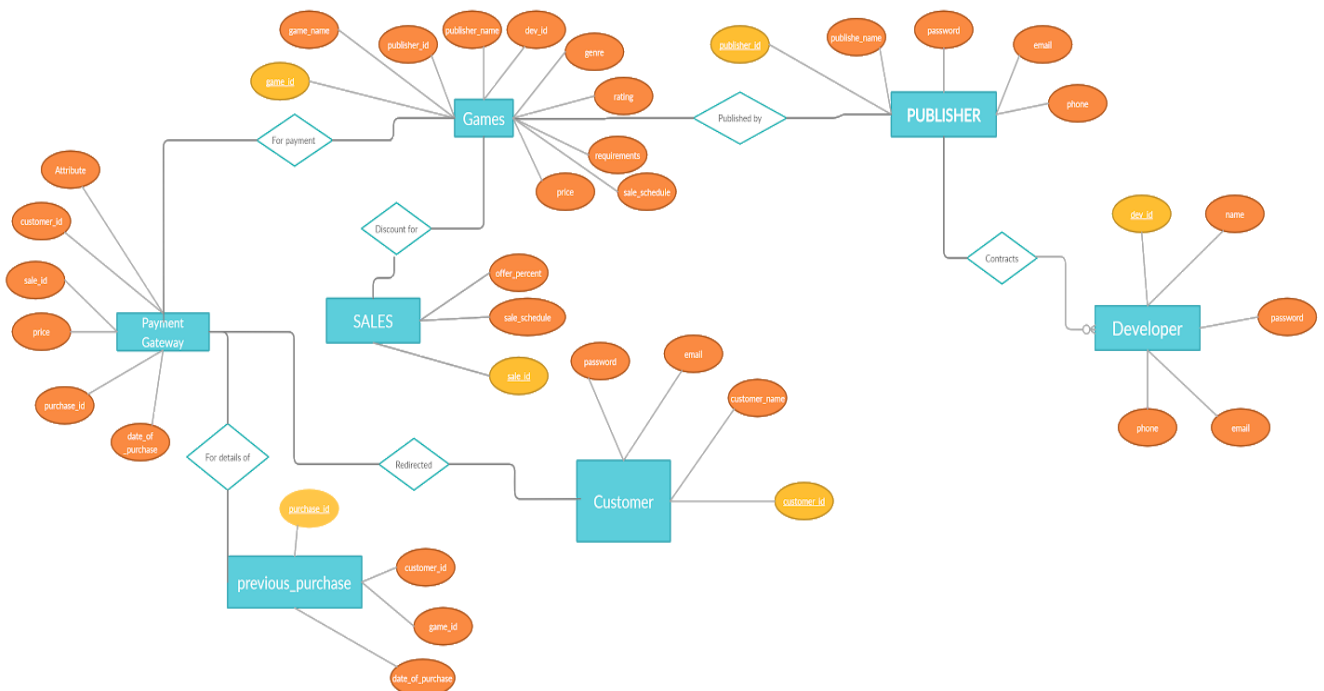
**date\_of\_purchase (not null)**

## REVIEW-2 (Design of Diagrams & Prototype Design)

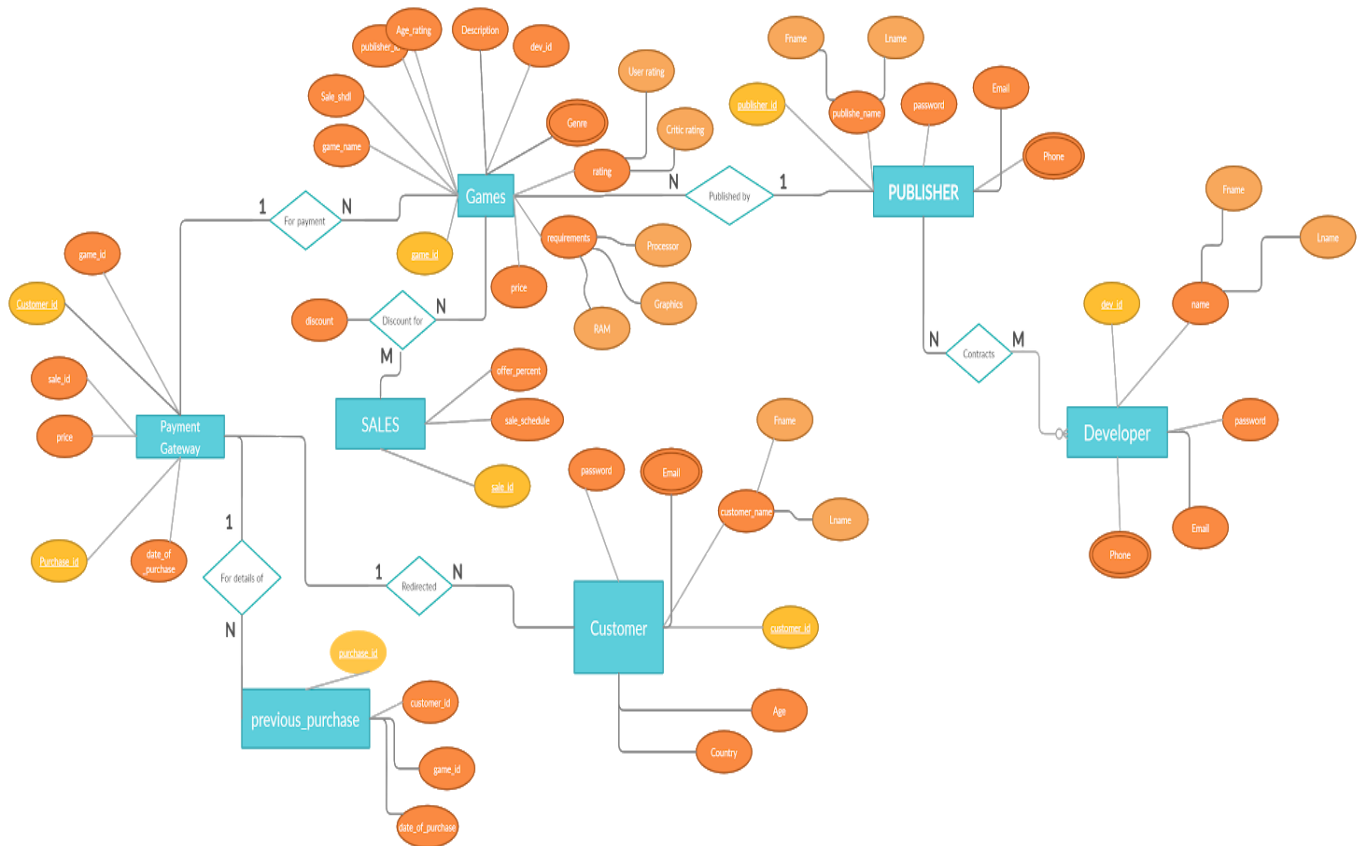
### UML Diagram



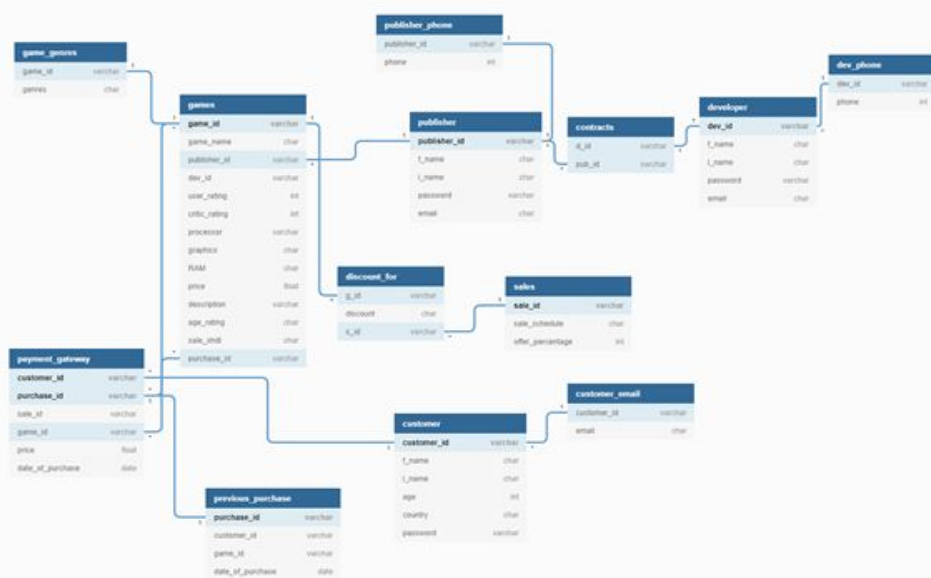
### Entity Relationship Diagram



## Enhanced Entity Relationship Diagram



## Relational Database Schema Diagram



### **REVIEW-3 (Development of a Model)**

```
create table Customer(Customer_ID varchar(10) Primary Key,  
Customer_Name varchar(25),  
Customer_Password varchar(30),  
Customer_Email varchar(40),  
Country varchar(30),  
Customer_Age int  
);
```

```
create table Previous_Purchases(  
Customer_ID varchar(10),  
Purchase_ID varchar(10) Primary Key,  
Game_ID varchar(10),  
Date_of_Purchase date,  
Price float,  
Foreign Key (Customer_ID) References Customer(Customer_ID)  
);
```

```
create table Publisher(
```



**Publisher\_ID varchar(10) primary KEY,**

**Publisher\_Name varchar(20),**

**Password varchar(30),**

**Email varchar(40),**

**Phone varchar(10)**

**);**

**create table Developer(**

**Dev\_ID varchar(10) primary KEY,**

**Name varchar(20),**

**Password varchar(30),**

**Email varchar(40),**

**Phone varchar(10),**

**Publisher\_ID varchar(10),**

**foreign key(Publisher\_ID) references Publisher(Publisher\_ID)**

**);**

**create table Sale(**

**Sale\_ID varchar(10) PRIMARY KEY,**

**Offer\_Percent float,**

**sale\_schedule date UNIQUE**

**);**

**create table Games(**

**Game\_ID varchar(10) primary KEY,**

**Game\_Name varchar(20),**

**Publisher\_ID varchar(10),**

```
Dev_Id varchar(10),  
  
Genre varchar(10),  
  
Rating int,  
  
Requirements varchar(20),  
  
Price float,  
  
Sale_Schedule date,  
  
Age_Rating float,  
  
Description varchar(50),  
  
FOREIGN KEY(Publisher_ID) REFERENCES Publisher(Publisher_ID),  
  
FOREIGN KEY(Sale_Schedule) REFERENCES Sale(sale_schedule)  
  
);  
  
create table Payment_Gateway(  
  
Game_ID varchar(10),  
  
Customer_ID varchar(10),  
  
Sale_ID varchar(10),  
  
Price float,  
  
Purchase_ID varchar(10),  
  
Date_of_Purchase date,  
  
FOREIGN KEY(Game_id) REFERENCES Games(Game_ID),  
  
FOREIGN KEY(Customer_ID) REFERENCES Customer(Customer_ID),  
  
FOREIGN KEY(Sale_ID) REFERENCES Sale(Sale_ID),  
  
FOREIGN KEY(Purchase_ID) REFERENCES Previous_Purchases(Purchase_ID)  
  
);
```

```
insert into Customer values('Raj1026#28',  
  
'Rajesh Kumar',  
  
'Rajesh!2001',  
  
'rajcool@gmail.com',  
  
'India',  
  
'26'  
  
);
```

```
insert into Customer values('Adi2085%19',  
  
'Aditya Sharma',  
  
'Aditya*3032',  
  
'adityas@yahoo.com',  
  
'India',  
  
'19'  
  
);
```

```
insert into Customer values('Ish9405%20',  
  
'Isha Saxena',  
  
'ILMF@*112',  
  
'isha2001@gmail.com',  
  
'India',  
  
'22'  
  
);
```

```
insert into Customer values('Abh2004$68',  
  
'Abhinav Kumar',  
  
'Abhi$$103',
```

```
'cooldudeabhi@gmail.com',  
  
'India',  
  
'16'  
  
);  
  
insert into Customer values('Ada3049#13',  
  
'Adam Parker',  
  
'Adamexpert@1654',  
  
'adamparker2056@yahoo.com',  
  
'United States of America',  
  
'18'  
  
);  
  
insert into Customer values('Yas5903#64',  
  
'Yash Renwa',  
  
'GGyash#12',  
  
'yashrenwa@gmail.com',  
  
'India',  
  
'20'  
  
);  
  
insert into Customer values('Sar3956#84',  
  
'Sarah Goldberg',  
  
'Whysoserious#1337',  
  
'sarahg334@gmail.com',  
  
'United Kingdom',  
  
'21'
```

);

insert into Customer values('Ada1302\$22',

'Adamya Garg',

'Adamya#20',

'adamyagarg11@gmail.com',

'India',

'19'

);

insert into Customer values('Ani2245!49',

'Anishka Bhatia',

'Justsocasual@223',

'anishkabh214@gmail.com',

'India',

'23'

);

insert into Customer values('Ary3302#45',

'Aryan Abraham',

'Aryan#ayaan220',

'pythagoraskumar2203@gmail.com',

'India',

'38'

);

insert into Previous\_Purchases values('Raj1026#28',

'243#\$10292',

**'101',**

**DATE '2010-03-12',**

**'520.00'**

**);**

**insert into Previous\_Purchases values('Adi2085%19',**

**'375#\$38502',**

**'105',**

**DATE '2011-11-20',**

**'520.00'**

**);**

**insert into Previous\_Purchases values('Ish9405%20',**

**'193#\$10345',**

**'101',**

**DATE '2011-05-06',**

**'520.00'**

**);**

**insert into Previous\_Purchases values('Abh2004\$68',**

**'496#\$05637',**

**'103',**

**DATE '2015-06-27',**

**'120.00'**

**);**

**insert into Previous\_Purchases values('Abh2004\$68',**

**'496#\$20075',**

**'104',**

**DATE '2016-11-03',**

**'220.00'**

**);**

**insert into Previous\_Purchases values('Ada3049#13',**

**'205#\$20033',**

**'108',**

**DATE '2010-03-12',**

**'320.00'**

**);**

**insert into Previous\_Purchases values('Ani2245!49',**

**'103#\$67593',**

**'110',**

**DATE '2017-05-30',**

**'920.00'**

**);**

**insert into Previous\_Purchases values('Ary3302#45',**

**'186#\$73950',**

**'103',**

**DATE '2013-03-21',**

**'120.00'**

**);**

**insert into Previous\_Purchases values('Ary3302#45',**

**'299#\$28564',**

**'104',**

**DATE '2013-03-21',**

**'220.00'**

**);**

**insert into Previous\_Purchases values('Ary3302#45',**

**'495#\$10375',**

**'107',**

**DATE '2014-04-05',**

**'520.00'**

**);**

**insert into Publisher values('1001','Minato**

**Namikaze','abcdef','minatonamikaze\_4th@gmail.com','9420654179');**

**insert into Publisher values('1002','Kushina**

**Uzumaki','abcdef','kushinauzumaki\_4th@gmail.com','9420654179');**

**insert into Publisher values('1003','Hashirama**

**Senju','abcdef','hashiramasenju\_1st@gmail.com','9420654179');**

**insert into Publisher values('1004','Tobirama**

**Senju','abcdef','tobiramasenju\_2nd@gmail.com','9420654179');**

**insert into Publisher values('1005','Tsunade**

**Senju','abcdef','tsunadesenju\_5th@gmail.com','9420654179');**

**insert into Publisher values('1006','Kakashi**

**Hatake','abcdef','kakashihatake\_6th@gmail.com','9420654179');**

**insert into Publisher values('1007','Naruto**

**Uzumaki','abcdef','minatonamikaze\_4th@gmail.com','9420654179');**

**insert into Publisher values('1008','Konohamaru**

**Sarutobi','abcdef','konahamarusarutobi\_8th@gmail.com','9420654179');**



**insert into Publisher values('1009','Sarada  
Uchiha','abcdef','saradauchiha\_9th@gmail.com','9420654179');**

**insert into Publisher values('1010','Hiruzen  
Sarutobi','abcdef','hiruzensarutobi\_3rd@gmail.com','9420654179');**

**insert into developer values('1','Clark Kent','efgh','clarkkent@gmail.com','9429687502','1001');**

**insert into developer values('2','Bruce  
Wayne','efgh','brucewayne@gmail.com','9429687502','1003');**

**insert into developer values('3','Diana  
Prince','efgh','dianaprince@gmail.com','9429687502','1009');**

**insert into developer values**

**('4','Oliver Queen','efgh','oliverqueen@gmail.com','9429687502','1006');**

**insert into developer values**

**('5','Hal Jordan','efgh','haljordan@gmail.com','9429687502','1002');**

**insert into developer values**

**('6','Jonn Jonnz','efgh','jonnjonnz@gmail.com','9429687502','1008');**

**insert into developer values**

**('7','Billy Batson','efgh','billybatson@gmail.com','9429687502','1007');**

**insert into developer values**

**('8','Arthur Curry','efgh','arthurcurry@gmail.com','9429687502','1004');**

**insert into developer values('9','Zatanna','efgh','zatanaa@gmail.com','9429687502','1005');**

**insert into developer values**

**('10','Barbara Gordon','efgh','barbaragordon@gmail.com','9429687502','1010');**

**insert into Sale values('#111',8.5,DATE'2010-12-25');**

**insert into Sale values('#222',10.5,DATE'2010-6-30');**

**insert into Sale values('#333',2.55,DATE'2010-11-28');**

**insert into Sale values('#444',6.75,DATE'2010-05-27');**

**insert into Sale values('#555',3.35,DATE'2010-01-3');**

**insert into Games values**

**('101','Valorant','1001','1','Action',4,'8GB RAM',520.00,DATE'2010-12-25','16','Good');**

**insert into Games values**

**('102','Call of Duty','1002','2','Action',5,'8GB RAM',20.00,DATE'2010-6-30','16','Good');**

**insert into Games values**

**('103','Cricket','1003','3','Action',3,'8GB RAM',120.00,DATE'2010-11-28','16','Good');**

**insert into Games values**

**('104','Fifa','1006','4','Action',4,'8GB RAM',220.00,DATE'2010-05-27','16','Good');**

**insert into Games values**

**('105','PubG','1004','6','Action',2,'8GB RAM',520.00,DATE'2010-01-3','16','Good');**

**insert into Games values**

**('106','FauG','1005','7','Action',1,'8GB RAM',120.00,DATE'2010-12-25','16','Good');**

**insert into Games values**

**('107','Mario','1007','5','Action',0,'8GB RAM',520.00,DATE'2010-6-30','16','Good');**

**insert into Games values**

**('108','Sonic','1008','8','Action',4,'8GB RAM',320.00,DATE'2010-11-28','16','Good');**

**insert into Games values**

**('109','Prince of Persia','1010','9','Action',5,'8GB RAM',720.00,DATE'2010-05-27','16','Good');**

**insert into Games values**

**('110','Purble Palace','1009','10','Action',4,'8GB RAM',920.00,DATE'2010-01-3','16','Good');**

**insert into Payment\_Gateway values**

**('101','Raj1026#28','#111',1000.00,'243#\$10292',DATE'2011-12-25');**

**insert into Payment\_Gateway values**

**('102','Adi2085%19','#222',999.00,'375#\$38502',DATE'2011-6-30');**

**insert into Payment\_Gateway values**

**('103','Ish9405%20','#333',999.00,'299#\$28564',DATE'2011-11-28');**

**insert into Payment\_Gateway values**

**('104','Abh2004\$68','#444',1250.99,'496#\$05637',DATE'2011-05-27');**

**insert into Payment\_Gateway values**

**('105','Ada3049#13','#555',1150.99,'205#\$20033',DATE'2014-01-3');**

**insert into Payment\_Gateway values**

**('106','Ani2245!49','#111',3150.99,'103#\$67593',DATE'2012-12-25');**

**insert into Payment\_Gateway values**

**('107','Ary3302#45','#222',1650.99,'186#\$73950',DATE'2011-6-30');**

**insert into Payment\_Gateway values**

**('108','Ary3302#45','#333',250.99,'299#\$28564',DATE'2011-11-28');**

**insert into Payment\_Gateway values**

**('109','Ary3302#45','#444',3220.99,'495#\$10375',DATE'2012-05-27');**

**insert into Payment\_Gateway values**

**('110','Abh2004\$68','#555',350.99,'496#\$20075',DATE'2013-01-3');**

## Publisher

	Publisher_ID	Publisher_Name	Password	Email	Phone
▶	1001	Minato Namikaze	abcdef	minato_4th@gmail.com	9420654178
	1002	Kushina Uzumaki	abcdef	kushina@gmail.com	9420654178
	1003	Hashirama Senju	abcdef	hashiramasenju_1st@gmail.com	9420654178
	1004	Tobirama Senju	abcdef	tobiramasenju_2nd@gmail.com	9420654178
	1005	Tsunade Senju	abcdef	tsunadesenju_5th@gmail.com	9420654178
	1006	Kakashi Hatake	abcdef	kakashihatake_6th@gmail.com	9420654178
	1007	Naruto Uzumaki	abcdef	minatonamikaze_4th@gmail.com	9420654178
	1008	Konohamaru Sarutobi	abcdef	konahamarusarutobi_8th@gmail.com	9406541789
	1009	Sarada Uchiha	abcdef	saradauchiha_9th@gmail.com	9420654178
	1010	Hiruzen Sarutobi	abcdef	hiruzensarutobi_3rd@gmail.com	9420541789

publisher 1 x

#	Field	Schema	Table	Type	Character Set	Display Size	Precision	Scale
1	Publisher_ID	minato	publisher	VARCHAR	utf8mb4	10	4	0
2	Publisher_Name	minato	publisher	VARCHAR	utf8mb4	20	19	0
3	Password	minato	publisher	VARCHAR	utf8mb4	30	6	0
4	Email	minato	publisher	VARCHAR	utf8mb4	50	32	0
5	Phone	minato	publisher	VARCHAR	utf8mb4	10	10	0

publisher 1 x

Apply

	Field	Type	Null	Key	Default	Extra
▶	Publisher_ID	varchar(10)	NO	PRI	NULL	
	Publisher_Name	varchar(20)	YES		NULL	
	Password	varchar(30)	YES		NULL	
	Email	varchar(50)	YES		NULL	
	Phone	varchar(10)	YES		NULL	

Result 11 x

## Customer

	Customer_ID	Customer_Name	Password	Email	Country	Age
▶	100001	Rajesh	Rajesh!2001	rajcool@gmail.com	India	26
	100002	Aditya	Aditya*3032	adityas@yahoo.com	India	19
	100003	Isha	ILMF@*112	isha2001@gmail.com	India	22
	100004	Abhinav	Abhi 103	cooldudeabhi@gmail.com	India	16
	100005	Adam	Adamexpert@1654	adamparker2056@yahoo.com	United States of America	18
	100006	Yash	GGyash#12	yashrenwa@gmail.com	India	20
	100007	Sarah	Whysoserious1337	sarahg334@gmail.com	United Kingdom	21
	100008	Adamyia	Adamyia##20	adamyagarg11@gmail.com	India	19
	100009	Anishka	Justsocasual@223	anishkabh214@gmail.com	India	23
	100010	Aryan	Aryan ayaan220	pythagoraskumar2203@gmail.com	India	38

customer 2 x

Field Types								
#	Field	Schema	Table	Type	Character Set	Display Size	Precision	Scale
1	Customer_ID	minato	customer	VARCHAR	utf8mb4	10	6	0
2	Customer_Name	minato	customer	VARCHAR	utf8mb4	10	8	0
3	Password	minato	customer	VARCHAR	utf8mb4	30	16	0
4	Email	minato	customer	VARCHAR	utf8mb4	50	29	0
5	Country	minato	customer	VARCHAR	utf8mb4	30	24	0
6	Age	minato	customer	INT	binary	11	2	0

customer 2 x Apply

	Field	Type	Null	Key	Default	Extra
▶	Customer_ID	varchar(10)	NO	PRI	<b>NULL</b>	
	Customer_Name	varchar(10)	YES		<b>NULL</b>	
	Password	varchar(30)	YES		<b>NULL</b>	
	Email	varchar(50)	YES		<b>NULL</b>	
	Country	varchar(30)	YES		<b>NULL</b>	
	Age	int(11)	YES		<b>NULL</b>	

Result 12 x

## Games

	Game_ID	Game_Name	Publisher_ID	Dev_Id	Genre	Rating	Requirements	Price	Sale_ID	Age_Rating	Description
▶	101	Valorant	1001	1	Action	4	8GB RAM	520	#111	16	Good
	102	COD	1002	2	Action	5	8GB RAM	20	#222	16	Good
	103	Cricket	1003	3	Action	3	8GB RAM	120	#333	16	Good
	104	Fifa	1006	4	Action	4	8GB RAM	220	#444	16	Good
	105	PubG	1004	6	Action	2	8GB RAM	520	#555	16	Good
	106	FauG	1005	7	Action	1	8GB RAM	120	#111	16	Good
	107	Mario	1007	5	Action	0	8GB RAM	520	#222	16	Good
	108	Sonic	1008	8	Action	4	8GB RAM	320	#333	16	Good
	109	Prince of Persia	1010	9	Action	5	8GB RAM	720	#444	16	Good
	110	Purple Palace	1009	10	Action	4	8GB RAM	920	#555	16	Good

games 3 x

#	Field	Schema	Table	Type	Character Set	Display Size	Precision	Scale
1	Game_ID	minato	games	VARCHAR	utf8mb4	10	3	0
2	Game_Name	minato	games	VARCHAR	utf8mb4	20	16	0
3	Publisher_ID	minato	games	VARCHAR	utf8mb4	10	4	0
4	Dev_Id	minato	games	VARCHAR	utf8mb4	10	2	0
5	Genre	minato	games	VARCHAR	utf8mb4	10	6	0
6	Rating	minato	games	INT	binary	11	1	0
7	Requirements	minato	games	VARCHAR	utf8mb4	20	7	0
8	Price	minato	games	FLOAT	binary	12	-28	31
9	Sale_ID	minato	games	VARCHAR	utf8mb4	10	4	0
10	Age_Rating	minato	games	FLOAT	binary	12	-29	31
11	Description	minato	games	VARCHAR	utf8mb4	50	4	0

games 3 x

Apply

	Field	Type	Null	Key	Default	Extra
▶	Game_ID	varchar(10)	NO	PRI	NULL	
	Game_Name	varchar(20)	YES		NULL	
	Publisher_ID	varchar(10)	YES	MUL	NULL	
	Dev_Id	varchar(10)	YES	MUL	NULL	
	Genre	varchar(10)	YES		NULL	
	Rating	int(11)	YES		NULL	
	Requirements	varchar(20)	YES		NULL	
	Price	float	YES		NULL	
	Sale_ID	varchar(10)	YES	MUL	NULL	
	Age_Rating	float	YES		NULL	
	Description	varchar(50)	YES		NULL	

Result 13 x

## Sale

	Sale_ID	Offer_Percent	Sale_Schedule
▶	#111	8.5	2010-12-25
	#222	10.5	2010-06-30
	#333	2.55	2010-11-28
	#444	6.75	2010-05-27
	#555	3.35	2010-01-03
•	NULL	NULL	NULL

sale 4 x

Field Types									
#	Field	Schema	Table	Type	Character Set	Display Size	Precision	Scale	
1	Sale_ID	minato	sale	VARCHAR	utf8mb4	10	4	0	
2	Offer_Percent	minato	sale	FLOAT	binary	12	-27	31	
3	Sale_Schedule	minato	sale	DATE	binary	10	10	0	

sale 4 x App

	Field	Type	Null	Key	Default	Extra
▶	Sale_ID	varchar(10)	NO	PRI	NULL	
	Offer_Percent	float	YES		NULL	
	Sale_Schedule	date	YES		NULL	

Result 14 x

## Previous Purchases

	Customer_ID	Purchase_ID	Game_ID	Date_of_Purchase	Price
▶	100007	103#67593	110	2017-05-30	920
	100009	186#73950	103	2013-03-21	120
	100003	193#10345	101	2011-05-06	520
	100005	205#20033	108	2010-03-12	320
	100001	243#10292	101	2010-03-12	520
	100008	299#28564	104	2013-03-21	220
	100002	375#38502	105	2011-11-20	520
	100010	495#10375	107	2014-04-05	520
	100006	496#05637	103	2015-06-27	120
	100004	496#20075	104	2016-11-03	220

previous\_purchases5 x

#	Field	Schema	Table	Type	Character Set	Display Size	Precision	Scale
1	Customer_ID	minato	previous_purchases	VARCHAR	utf8mb4	10	6	0
2	Purchase_ID	minato	previous_purchases	VARCHAR	utf8mb4	10	9	0
3	Game_ID	minato	previous_purchases	VARCHAR	utf8mb4	10	3	0
4	Date_of_Purchase	minato	previous_purchases	DATE	binary	10	10	0
5	Price	minato	previous_purchases	FLOAT	binary	12	-28	31

previous\_purchases5 x Apply

	Field	Type	Null	Key	Default	Extra
▶	Customer_ID	varchar(10)	YES	MUL	NULL	
	Purchase_ID	varchar(10)	NO	PRI	NULL	
	Game_ID	varchar(10)	YES		NULL	
	Date_of_Purchase	date	YES		NULL	
	Price	float	YES		NULL	

Result 6 x



## Payment Gateway

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

	Game_ID	Customer_ID	Sale_ID	Price	Purchase_ID	Date_of_Purchase
▶	101	100001	#111	1000	243#10292	2011-12-25
	102	100002	#222	999	375#38502	2011-06-30
	103	100003	#333	999	299#28564	2011-11-28
	104	100004	#444	1250.99	496#05637	2011-05-27
	105	100005	#555	1150.99	205#20033	2014-01-03
	106	100006	#111	3150.99	103#67593	2012-12-25
	107	100008	#222	1650.99	186#73950	2011-06-30
	108	100010	#333	250.99	299#28564	2011-11-28
	109	100009	#444	3220.99	495#10375	2012-05-27
	110	100007	#555	350.99	496#20075	2013-01-03

payment\_gateway 7 ×

Field Types

#	Field	Schema	Table	Type	Character Set	Display Size	Precision	Scale
1	Game_ID	minato	payment_gateway	VARCHAR	utf8mb4	10	3	0
2	Customer_ID	minato	payment_gateway	VARCHAR	utf8mb4	10	6	0
3	Sale_ID	minato	payment_gateway	VARCHAR	utf8mb4	10	4	0
4	Price	minato	payment_gateway	FLOAT	binary	12	-24	31
5	Purchase_ID	minato	payment_gateway	VARCHAR	utf8mb4	10	9	0
6	Date_of_Purchase	minato	payment_gateway	DATE	binary	10	10	0

payment\_gateway 7 × 0

	Field	Type	Null	Key	Default	Extra
▶	Game_ID	varchar(10)	YES	MUL	NULL	
	Customer_ID	varchar(10)	YES	MUL	NULL	
	Sale_ID	varchar(10)	YES	MUL	NULL	
	Price	float	YES		NULL	
	Purchase_ID	varchar(10)	YES	MUL	NULL	
	Date_of_Purchase	date	YES		NULL	

Result 8 ×

## Developer

	Dev_ID	Name	Password	email	Phone	Publisher_ID
▶	1	Clark Kent	efgh	darkkent@gmail.com	9429687022	1001
	10	Barbara Gordon	efgh	barbaragordon@gmail.com	9496875022	1010
	2	Bruce Wayne	efgh	brucewayne@gmail.com	9429687022	1003
	3	Diana Prince	efgh	dianaprince@gmail.com	9429685022	1009
	4	Oliver Queen	efgh	oliverqueen@gmail.com	9429875022	1006
	5	Hal Jordan	efgh	haljordan@gmail.com	9429687022	1002
	6	Jonn Jonnz	efgh	jonnjonnz@gmail.com	9429685022	1008
	7	Billy Batson	efgh	billybatson@gmail.com	9296875022	1007
	8	Arthur Curry	efgh	arthurcurry@gmail.com	4296875022	1004
	9	Zatanna	efgh	zatanaa@gmail.com	9429687522	1005

developer 9 ×

#	Field	Schema	Table	Type	Character Set	Display Size	Precision	Scale	
1	Dev_ID	minato	developer	VARCHAR	utf8mb4	10	2	0	
2	Name	minato	developer	VARCHAR	utf8mb4	20	14	0	
3	Password	minato	developer	VARCHAR	utf8mb4	30	4	0	
4	email	minato	developer	VARCHAR	utf8mb4	50	23	0	
5	Phone	minato	developer	VARCHAR	utf8mb4	10	10	0	
6	Publisher_ID	minato	developer	VARCHAR	utf8mb4	10	4	0	

developer 9 ×

	Field	Type	Null	Key	Default	Extra
▶	Dev_ID	varchar(10)	NO	PRI	NULL	
	Name	varchar(20)	YES		NULL	
	Password	varchar(30)	YES		NULL	
	email	varchar(50)	YES		NULL	
	Phone	varchar(10)	YES		NULL	
	Publisher_ID	varchar(10)	YES	MUL	NULL	

Result 10 ×

## **CONCLUSION**

**Our team has implemented a database model using sql queries for a video game distribution system. Motivation for such a project was taken from an existing software , Steam.**

**To conclude, we have described various entities involved, created tables and schemas for the appropriate requirements and have also provided the E-R diagram which helps in a better understanding of the system. Class diagrams have also been used to simplify the mappings between the tables.**

## REFERENCES

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