

Event Management Database Retrofit Analysis and Design

Database Design and Management Class Final Project

MASY-GC-2500 Fall 2014

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I. Overview

BARUCH PERFORMING ART CENTER (BPAC)

BACKGROUND INFORMATION

Baruch Performing Arts Center (BPAC) is a part of the Baruch College community. It has four venues and an average of 600 shows in total each year. These venues are available for outside companies to rent, internal student related events, and co-productions. An event management database designed by the Baruch IT department is currently in use.

The database contains specific production information including show names, venues, time frames, production company information, contact information, etc. The BPAC staff uses the database for recording and retrieving contract information, preparing for technical support, making staffing plans, and preparing for the audience.

SCOPE

This project will analyze, design, and create a replacement relational event management database for BPAC. Scope of the project shall encompass the following:

- Planning and Requirement Gathering
- Conceptual Model (Enhanced E-R Diagram)
- Logical Database Model
- Normalization of Relations
- Creating of Relational Database Tables
- Sample Queries

BUSINESS PURPOSE

Due to insufficient design of the database, not enough information is included in the DBMS. The staff has to go to 3 other separate places (Local server, Google Drive, and paper file folder) to gather all information needed for a show. During the busiest time, the staff has to work extra hours coordinating and organizing (include scanning and printing) all the files in different sources. The work efficiency is sacrificed and the morale stays low. This project aims to design a replacement event management system for BPAC to include all the information.

II. Planning

A. CURRENT STATE

Currently, the productions team of BPAC maintains 4 different methods to store files related to a show: database, folders on local server, Google Drive, and paper files. The database in use contains only the basic event information (e.g., show names, venues, time frames, production company information, contact information, etc.) from the initial contracts. The following graph shows the project management phases involved in the show productions, the main documents generated and their storage methods:



B. PROPOSAL

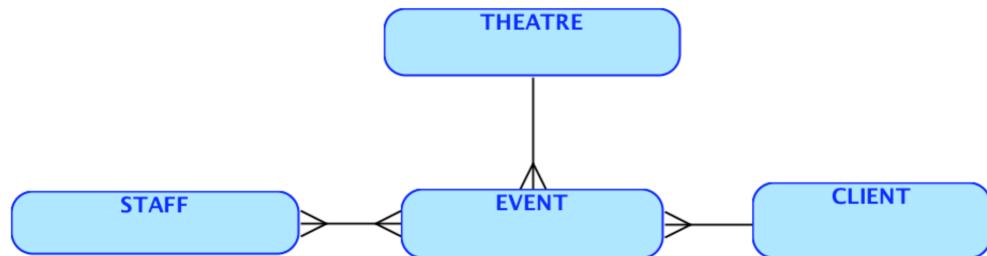
A replacement event management database shall be built to hold all data necessary to generate the documents specified in the project management process above. Key reports are listed below:

- Pricing Offer Overview
- Technical/Front of House Staffing Schedule
- Technical Support Details
- External Pass Information (for Baruch Security Office)
- Monthly Event Overview
- External Client Information

III. Conceptual Model

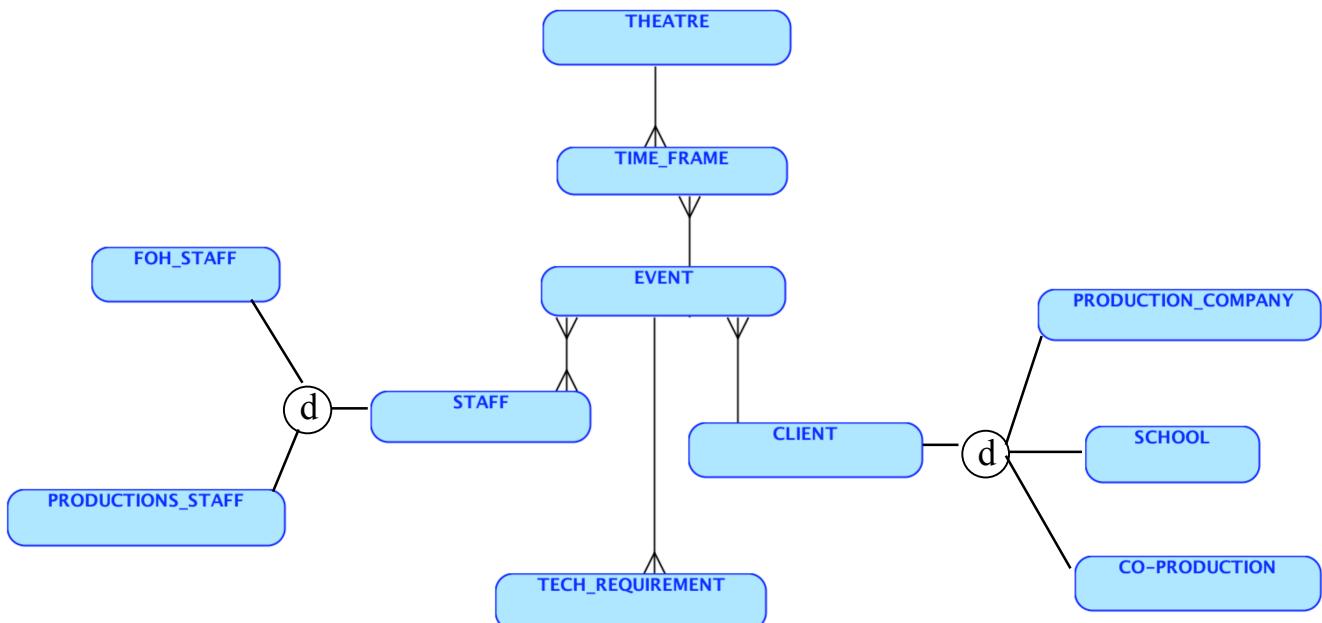
A. ENTERPRISE DIAGRAM

The figure below is a high-level enterprises diagram of the event management model to be used:



B. ENHANCED E-R DIAGRAM

The figure below shows all the entities and their relationships that are used in the database system:



C. BUSINESS RULES

1. There are three types of clients: outside production company (charged), Baruch College (uncharged), and co-production (cooperation between BPAC and outside production company). They are not overlapped.
2. One client can have many events.
3. One theatre can only have one event going on during one time frame.
4. One theatre can hold many events during one day at different time frames.
5. One event can have many time frames (be produced at different times on different days).
6. One event can only be produced in one theatre.
7. Two types of staff are involved in the staffing schedules: Front of House (FOH) staff and productions staff. They are not overlapped.
8. One event can have many technical requirements.
9. Many productions/FOH staff can work together on one event.
10. One staff only has one working time frame during one day (they only sign in and sign out once).

IV. Logical Database Model

A. NORMALIZED RELATIONS

Relations converted from the EER Diagram are already in 3NF as listed:

THEATRE (ID, Name, Location)

TIME_FRAME (Start_Time, End_Time, Theatre_ID, Event_ID)

EVENT (ID, Name, Theatre_ID, Tech_Note, FOH_Note, Box_Office_Note, Marketing_Note, Lobbies_Note, Client_ID, Production_Meeting, Tech_Checkin, House_Checkin, Final_Payment)

FOH_TASK (Staff_ID, Event_ID, Start_Time, End_Time)

STAFF (ID, Name, Type)

TECH_REQUIREMENT (Event_ID, Projector, Screen, Microphone_W, Microphone_Wless, Lighting, Communication, Note)

PRODUCTIONS_TASK (Staff_ID, Event_ID, Start_Time, End_Time)

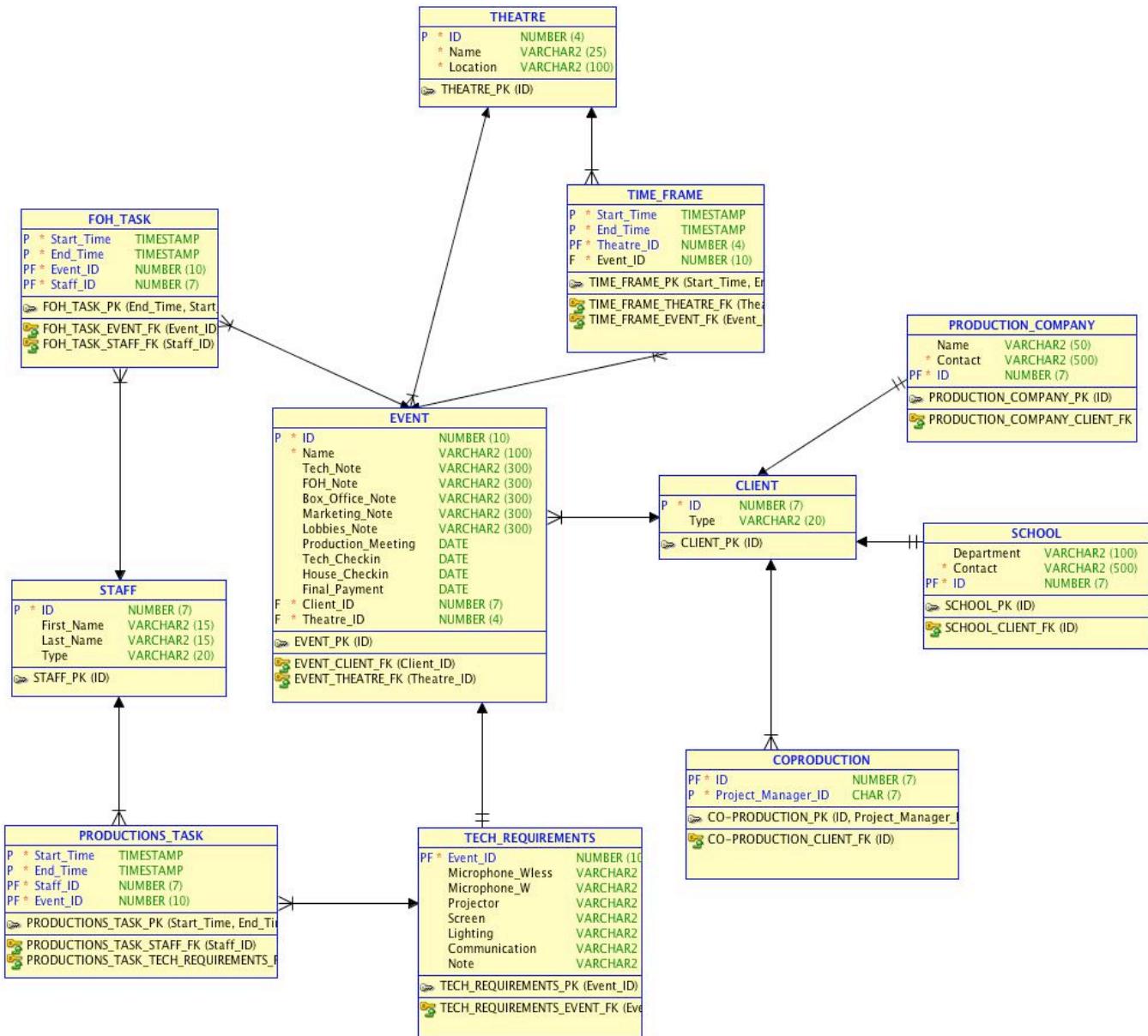
CLIENT (ID, Type)

PRODUCTION_COMPANY (ID, Name, Contact)

SCHOOL (ID, Department, Contact)

CO-PRODUCTION (ID, Project_Manager_ID)

B. SQL DEVELOPER RELATIONAL MODEL



V. Physical Database Model

A. THE DDL AND DML

Since Oracle is used for this database system, the DDL (Data Definition Language) is used to generate all the essential tables, and the DML (Data Manipulation Language) is used to populate some test data for testing purpose.

The completed DDL can be downloaded at (it's also attached in the Appendix):

<https://gist.github.com/FangzhouCheng/61255d61f569c1c0da66>

The completed DML file can be download it at:

<https://gist.github.com/FangzhouCheng/b2689c06991cdf187ffe>

B. DATABASE TABLES

There are 11 tables created in replacement BPAC DBMS:

The screenshot shows the Oracle SQL Developer interface. On the left, the 'Connections' sidebar shows a connection to 'BPAC'. Under 'Tables (Filtered)', there are eleven tables listed: CLIENT, COPRODUCTION, EVENT, FOH_TASK, PRODUCTION_COMPANY, PRODUCTIONS_TASK, SCHOOL, STAFF, TECH_REQUIREMENT, THEATRE, and TIME_FRAME. Below these are 'Views' and 'Editioning Views'. At the bottom left is a 'Browser' pane with 'Designs [1]' and 'Untitled_1'. The main workspace is a 'SQL Worksheet' tab where the following DML script is run:

```
describe CLIENT;
describe PRODUCTION_COMPANY;
describe SCHOOL;
describe COPRODUCTION;

/* show constraints for each table */

COMMIT;
```

The 'Script Output' window at the bottom right shows the results of the 'describe' commands and a successful commit:

```
describe COPRODUCTION
Name          Null      Type
ID           NOT NULL NUMBER(7)
PROJECT_MANAGER_ID NOT NULL NUMBER(7)

committed.
```

Example: Metadata Information of table EVENT

Actions...						
	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	ID	NUMBER(10,0)	No	(null)	1	(null)
2	CLIENT_ID	NUMBER(7,0)	No	(null)	2	(null)
3	THEATRE_ID	NUMBER(4,0)	No	(null)	3	(null)
4	NAME	VARCHAR2(100 BYTE)	No	(null)	4	(null)
5	TECH_NOTE	VARCHAR2(300 BYTE)	Yes	(null)	5	(null)
6	FOH_NOTE	VARCHAR2(300 BYTE)	Yes	(null)	6	(null)
7	BOX_OFFICE_NOTE	VARCHAR2(300 BYTE)	Yes	(null)	7	(null)
8	MARKETING_NOTE	VARCHAR2(300 BYTE)	Yes	(null)	8	(null)
9	LOBBIES_NOTE	VARCHAR2(300 BYTE)	Yes	(null)	9	(null)
10	PRODUCTION_MEETING	DATE	Yes	(null)	10	(null)
11	TECH_CHECKIN	DATE	Yes	(null)	11	(null)
12	HOUSE_CHECKIN	DATE	Yes	(null)	12	(null)
13	FINAL_PAYMENT	DATE	Yes	(null)	13	(null)

Example: Constraints on table EVENT

Actions...									
	CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE	STATUS	DEFERRABLE
1	EVENT_CLIENT_FK	Foreign_Key	(null)	CHENGF	CLIENT	CLIENT_PK	NO ACTION	ENABLED	NOT DEFERRABLE
2	EVENT_PK	Primary_Keyword	(null)	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE
3	EVENT_THEATRE_FK	Foreign_Key	(null)	CHENGF	THEATRE	THEATRE_PK	NO ACTION	ENABLED	NOT DEFERRABLE
4	SYS_C0014861	Check	"ID" IS NOT NULL	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE
5	SYS_C0014862	Check	"CLIENT_ID" IS NOT NULL	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE
6	SYS_C0014863	Check	"THEATRE_ID" IS NOT NULL	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE
7	SYS_C0014864	Check	"NAME" IS NOT NULL	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE

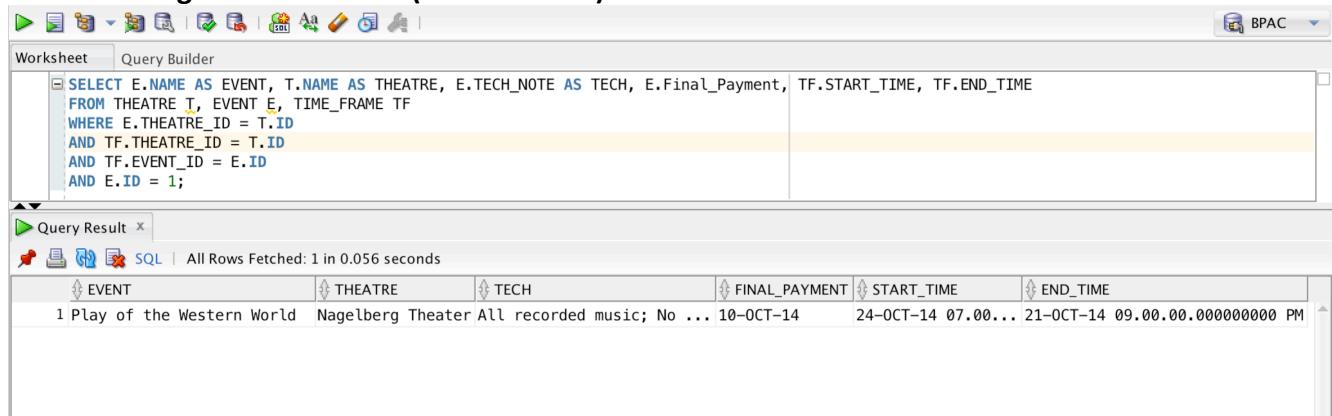
Example: Index on table EVENT

Actions...											
	INDEX_OWNER	INDEX_NAME	UNIQUENESS	STATUS	INDEX_TYPE	TEMPORARY	PARTITIONED	FUNCIDX_STATUS	JOIN_INDEX	COLUMNS	COLUMN_EXPRESSION
1	CHENGF	EVENT_PK	UNIQUE	VALID	NORMAL	N	NO	(null)	NO	ID	(null)

C. QUERIES

Due to limitation of screen shots, queries below are all in a simplified version:

1. Pricing Offer Overview (for one show)

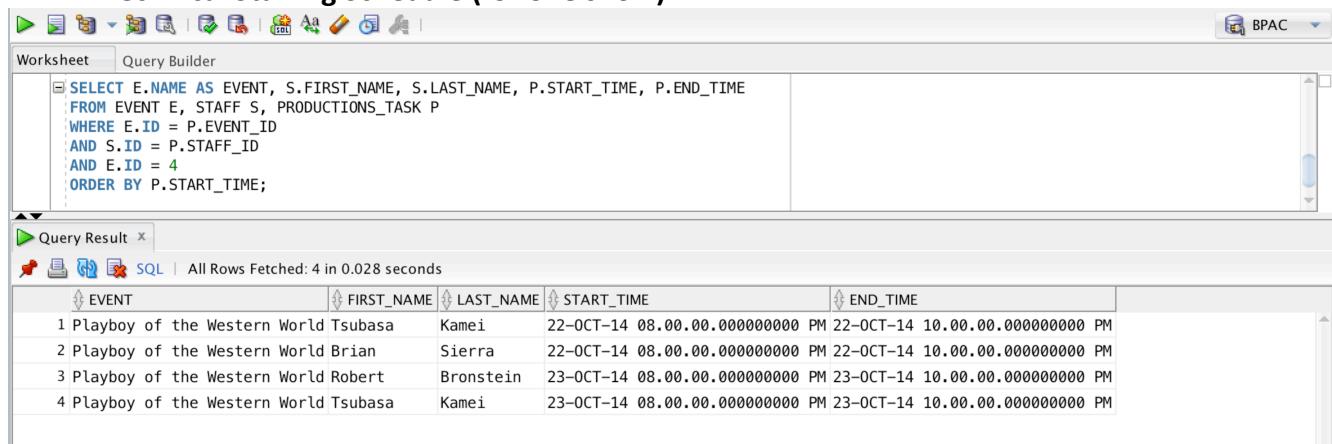


```
SELECT E.NAME AS EVENT, T.NAME AS THEATRE, E.TECH_NOTE AS TECH, E.Final_Payment, TF.START_TIME, TF.END_TIME
FROM THEATRE T, EVENT E, TIME_FRAME TF
WHERE E.THEATRE_ID = T.ID
AND TF.THEATRE_ID = T.ID
AND TF.EVENT_ID = E.ID
AND E.ID = 1;
```

Query Result | All Rows Fetched: 1 in 0.056 seconds

EVENT	THEATRE	TECH	FINAL_PAYMENT	START_TIME	END_TIME
1 Play of the Western World	Nagelberg Theater	All recorded music; No ...	10-OCT-14	24-OCT-14 07.00...	21-OCT-14 09.00.00.000000000 PM

2. Technical Staffing Schedule (for one show)

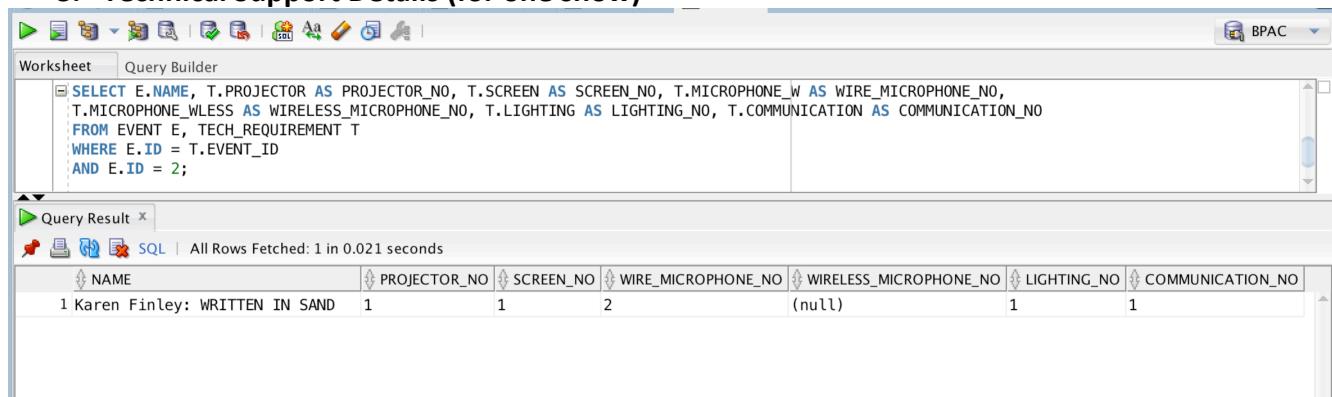


```
SELECT E.NAME AS EVENT, S.FIRST_NAME, S.LAST_NAME, P.START_TIME, P.END_TIME
FROM EVENT E, STAFF S, PRODUCTIONS_TASK P
WHERE E.ID = P.EVENT_ID
AND S.ID = P.STAFF_ID
AND E.ID = 4
ORDER BY P.START_TIME;
```

Query Result | All Rows Fetched: 4 in 0.028 seconds

EVENT	FIRST_NAME	LAST_NAME	START_TIME	END_TIME
1 Playboy of the Western World	Tsubasa	Kamei	22-OCT-14 08.00.00.000000000 PM	22-OCT-14 10.00.00.000000000 PM
2 Playboy of the Western World	Brian	Sierra	22-OCT-14 08.00.00.000000000 PM	22-OCT-14 10.00.00.000000000 PM
3 Playboy of the Western World	Robert	Bronstein	23-OCT-14 08.00.00.000000000 PM	23-OCT-14 10.00.00.000000000 PM
4 Playboy of the Western World	Tsubasa	Kamei	23-OCT-14 08.00.00.000000000 PM	23-OCT-14 10.00.00.000000000 PM

3. Technical Support Details (for one show)



```
SELECT E.NAME, T.PROJECTOR AS PROJECTOR_NO, T.SCREEN AS SCREEN_NO, T.MICROPHONE_W AS WIRE_MICROPHONE_NO,
T.MICROPHONE_WLESS AS WIRELESS_MICROPHONE_NO, T.LIGHTING AS LIGHTING_NO, T.COMMUNICATION AS COMMUNICATION_NO
FROM EVENT E, TECH_REQUIREMENT T
WHERE E.ID = T.EVENT_ID
AND E.ID = 2;
```

Query Result | All Rows Fetched: 1 in 0.021 seconds

NAME	PROJECTOR_NO	SCREEN_NO	WIRE_MICROPHONE_NO	WIRELESS_MICROPHONE_NO	LIGHTING_NO	COMMUNICATION_NO
1 Karen Finley: WRITTEN IN SAND	1	1	2	(null)	1	1

4. External Pass Information (for Baruch Security Office)

The screenshot shows the Oracle SQL Developer interface. The top menu bar includes 'File', 'Edit', 'Tools', 'Help', and a 'BPAC' tab. Below the menu is a toolbar with various icons. The main area has tabs for 'Worksheet' and 'Query Builder'. The 'Worksheet' tab is active, displaying the following SQL query:

```
SELECT P.NAME AS COMPANY, T.NAME AS THEATRE, TF.START_TIME, TF.END_TIME
FROM PRODUCTION_COMPANY P, TIME_FRAME TF, EVENT E, THEATRE T
WHERE P.ID = E.CLIENT_ID
AND T.ID = E.THEATRE_ID
AND TF.EVENT_ID = E.ID;
```

Below the query is a 'Query Result' section with a toolbar. It shows the results of the query:

COMPANY	THEATRE	START_TIME	END_TIME
1 Eunbikimmusic	Nagelberg Theater	01-NOV-14 08.00.00.000000000 PM	01-NOV-14 10.00.00.000000000 PM
2 Encompass New Opera Theatre	Nagelberg Theater	13-NOV-14 08.00.00.000000000 PM	13-NOV-14 10.00.00.000000000 PM
3 Encompass New Opera Theatre	Nagelberg Theater	14-NOV-14 08.00.00.000000000 PM	14-NOV-14 10.00.00.000000000 PM
4 Encompass New Opera Theatre	Nagelberg Theater	15-NOV-14 08.00.00.000000000 PM	15-NOV-14 10.00.00.000000000 PM
5 Encompass New Opera Theatre	Nagelberg Theater	16-NOV-14 03.00.00.000000000 PM	16-NOV-14 03.00.00.000000000 PM
6 MACnyc	Engelman Recital Hall	16-NOV-14 04.00.00.000000000 PM	16-NOV-14 06.00.00.000000000 PM

5. Event Overview (by month)

The screenshot shows the Oracle SQL Developer interface. The top menu bar includes 'File', 'Edit', 'Tools', 'Help', and a 'BPAC' tab. Below the menu is a toolbar with various icons. The main area has tabs for 'Worksheet' and 'Query Builder'. The 'Worksheet' tab is active, displaying the following SQL query:

```
SELECT E.NAME AS EVENT, T.NAME AS THEATRE, TO_CHAR(TF.START_TIME,'MONTH') AS MONTH
FROM TIME_FRAME TF, EVENT E, THEATRE T
WHERE E.THEATRE_ID = T.ID
AND E.ID = TF.EVENT_ID
ORDER BY MONTH DESC, EVENT;
```

Below the query is a 'Query Result' section with a toolbar. It shows the results of the query:

EVENT	THEATRE	MONTH
1 All About Amy/ Barrio Boy/ Aban/ Khorshid	Bernie West Theater	OCTOBER
2 GRIND: THE MOVIE	Nagelberg Theater	OCTOBER
3 Karen Finley: WRITTEN IN SAND	Nagelberg Theater	OCTOBER
4 Play of the Western World	Nagelberg Theater	OCTOBER
5 Playboy of the Western World	Nagelberg Theater	OCTOBER
6 Playboy of the Western World	Nagelberg Theater	OCTOBER
7 A Wake or a Wedding	Nagelberg Theater	NOVEMBER
8 A Wake or a Wedding	Nagelberg Theater	NOVEMBER
9 A Wake or a Wedding	Nagelberg Theater	NOVEMBER
10 A Wake or a Wedding	Nagelberg Theater	NOVEMBER
11 MAC presents They Write The Songs	Engelman Recital Hall	NOVEMBER
12 Murakami Music: Stories of Loss and Nostalgia	Nagelberg Theater	NOVEMBER
13 6th Annual Baruch College Holiday Concert: "A Not So Silent Night"	Engelman Recital Hall	DECEMBER
14 Journey to Planet Earth: "Extreme Realities"	Engelman Recital Hall	DECEMBER

6. External Client Information

The screenshot shows the Oracle SQL Developer interface. The top menu bar includes 'File', 'Edit', 'Tools', 'Help', and a 'BPAC' tab. Below the menu is a toolbar with various icons. The main area has tabs for 'Worksheet' and 'Query Builder'. The 'Worksheet' tab is active, displaying the following SQL query:

```
SELECT P.ID AS CLIENT_ID, P.NAME AS PRODUCTION_COMPANY, E.NAME AS EVENT_NAME, P.CONTACT
FROM PRODUCTION_COMPANY P, EVENT E
WHERE E.CLIENT_ID = P.ID;
```

Below the query is a 'Query Result' section with a toolbar. It shows the results of the query:

CLIENT_ID	PRODUCTION_COMPANY	EVENT_NAME	CONTACT
1	2 Eunbikimmusic	Murakami Music: Stories of Loss and Nostalgia	http://www.eunbikimusic.com/; the cell: 338W 23rd st
2	4 Encompass New Opera Theatre	A Wake or a Wedding	Nancy Rhodes: Artistic Director; Tel: (718) 398-4675;
3	5 MACnyc	MAC presents They Write The Songs	www.MACnyc.com; 212-465-2662; info@macnyc.com; Manhattan

VI. Report

A. BUSINESS INFORMATION

Baruch Performing Arts Center (BPAC) is a part of the Baruch College community. It has four venues and an average of 600 shows in total each year. These venues are available for outside companies to rent, internal student related events, and co-productions.

Address: Baruch Performing Arts Center
Baruch College: Entrance on E. 25th St. bet. Lexington & 3rd Aves.
55 Lexington Ave., Box B1-104
New York, NY 10010
Tel: (646) 312-4090
Fax: (646) 312-4084
Website: <http://www.baruch.cuny.edu/bpac/index.html>

B. PERSONNEL CONTACTED

Name: Robert McGinnis
Role: Productions Director
Tel: (646) 312-4086
Email: robert.mcginnis@baruch.cuny.edu

C. DBMS PLATFORM CURRENTLY USED

An event management database designed by the Baruch IT department is currently in use. The database contains only the basic event information (e.g., show names, venues, time frames, production company information, contact information, etc.) from the initial contracts. Information related to a show is separated and stored in the 4 locations: database, folders on local server, Google Drive, and paper files.

D. PURPOSE OF NEW DATABASE

Due to insufficient design of the database, not enough information is included in the DBMS. The staff has to go to 3 other separate places (Local server, Google Drive, and paper file folder) to gather all information needed for a show. During the busiest time, the staff has to work extra hours coordinating and organizing (include scanning and printing) all the files in different sources. The



work efficiency is sacrificed and the morale stays low. This project aims to design a replacement event management system for BPAC to include all the information.

E. CHALLENGES ENCOUNTERED

The main challenge encountered is transforming all the data stored in different sources into the forms that the relational database can support. Data structures are messy among the different sources and there are a lot of redundancies. Filtering out all the unnecessary data and making sense of the data collected as it pertains to an EER model is difficult.

Also, limited time and accesses are another challenge. Most of the resources, including the current DBMS (local server), Pricing Offer Overview/Schedule (local server) and Technical Notes (paper files) are only available in the BPAC office. Because of information security concerns, I can only access the data with the staff. However, due to the nature of theatre work, all members of the staff are freelancers, which means there is hardly “free time” for them to do interviews or help me gather data—when they are at work, they are busy with shows; when the shows are finished, they are gone.

F. LESSONS LEARNED

1. Talk to clients using their language. Clients are experts at their business rules and details, rather than database technology. To get the right answers, the analyst has to figure out what the client can or cannot understand, then choose the best approach to address the problem.
2. When one is familiar with normalization rules, 3NF relations come naturally. Especially when the system is relatively simple and straightforward, 3NF relations form naturally in one's mind when mapping out the EER Diagram.
3. Continuous iterations, tests and adjustments are necessary components in the success of database development. Due to communication problems, business environment changes or system bugs, an ongoing effort of improvement is a must.
4. Constant communication with the client is the key. The quality of requirement gathering determines the quality of database development.

G. DISCLAIMER

I, Fangzhou Cheng, state that the entire project is my own, original work.

Fangzhou Cheng
Signature

October 20, 2014
Date

VII. Appendix

A. THE DDL (CREATION OF TABLES IN ORACLE)

```

/* script name: CREATEBPAC.SQL                                */
/* purpose:      Build Oracle tables for Baruch Performing Arts Center (BPAC)    */
/* date:        20 Oct 2014                                         */
/* owner:       Fangzhou Cheng                                         */

/* Drop all tables before creating tables                      */
/*                                                               */

DROP TABLE FOH_TASK           CASCADE CONSTRAINTS ;
DROP TABLE STAFF              CASCADE CONSTRAINTS ;
DROP TABLE PRODUCTIONS_TASK   CASCADE CONSTRAINTS ;
DROP TABLE EVENT               CASCADE CONSTRAINTS ;
DROP TABLE TECH_REQUIREMENT   CASCADE CONSTRAINTS ;
DROP TABLE THEATRE             CASCADE CONSTRAINTS ;
DROP TABLE TIME_FRAME          CASCADE CONSTRAINTS ;
DROP TABLE CLIENT_EVENT        CASCADE CONSTRAINTS ;
DROP TABLE CLIENT              CASCADE CONSTRAINTS ;
DROP TABLE PRODUCTION_COMPANY CASCADE CONSTRAINTS ;
DROP TABLE SCHOOL              CASCADE CONSTRAINTS ;

/* Create all BPAC Database Tables (11)                         */
/*                                                               */

Create table THEATRE(
ID Number(4) Not Null,
Name Varchar2(20) Not Null,
Location Varchar2(100) Not Null,
Constraint theatre_pk PRIMARY KEY (ID));

Create table STAFF(
ID Number Not Null,
First_Name Varchar2(15) Not Null,
Last_Name Varchar2(15) Not Null,
Type Varchar2(20) ,
Constraint staff_pk PRIMARY KEY (ID));

Create table CLIENT(
ID Number(7) Not Null,
Type Varchar2(12) ,
Constraint client_pk PRIMARY KEY (ID));

Create table EVENT(
ID Number(10) Not Null,
Client_ID Number(7) Not Null,
Theatre_ID Number(4) Not Null,
Name Varchar2(100) Not Null,

```

```

Tech_Note Varchar2(300) ,
FOH_Note Varchar2(300) ,
Box_Office_Note Varchar2(300) ,
Marketing_Note Varchar2(300) ,
Lobbies_Note Varchar2(300) ,
Production_Meeting Date ,
Tech_Checkin Date ,
House_Checkin Date ,
Final_Payment Date ,
Constraint event_pk PRIMARY KEY (ID),
Constraint event_client_fk FOREIGN KEY (Client_ID) REFERENCES CLIENT(ID),
Constraint event_theatre_fk FOREIGN KEY (Theatre_ID) REFERENCES THEATRE(ID));

```

```

Create table TIME_FRAME(
Start_Time Timestamp Not Null,
End_Time Timestamp Not Null,
Theatre_ID Number(4) Not Null,
Event_ID Varchar2(10) Not Null,
Constraint time_frame PRIMARY KEY (Start_Time, End_Time, Theatre_ID),
Constraint time_theatre_fk FOREIGN KEY (THEATRE_ID) REFERENCES THEATRE(ID));

```

```

Create table FOH_TASK(
Staff_ID Number(7) Not Null,
Event_ID Number(10) Not Null,
Start_Time Timestamp Not Null,
End_Time Timestamp Not Null,
Constraint foh_task_pk PRIMARY KEY (Start_Time, End_Time, Event_ID, Staff_ID),
Constraint foh_task_staff_fk FOREIGN KEY (Staff_ID) REFERENCES STAFF(ID),
Constraint foh_task_event_fk FOREIGN KEY (Event_ID) REFERENCES EVENT(ID));

```

```

Create table TECH_REQUIREMENT(
Event_ID Number(10) Not Null,
Projector Varchar2(100) ,
Screen Varchar2(100) ,
Microphone_W Varchar2(100) ,
Microphone_Wless Varchar2(100) ,
Lighting Varchar2(100) ,
Communication Varchar2(100) ,
Note Varchar2(300) ,
Constraint tech_pk PRIMARY KEY (EVENT_ID),
Constraint tech_FK FOREIGN KEY (EVENT_ID) REFERENCES EVENT(ID));

```

```

Create table PRODUCTIONS_TASK(
Staff_ID Number(7) Not Null,
Event_ID Number(10) Not Null,
Start_Time Timestamp ,
End_Time Timestamp ,
Constraint productions_task_pk PRIMARY KEY (Start_Time, End_Time),
Constraint productions_task_staff_fk FOREIGN KEY (Staff_ID) REFERENCES STAFF(ID),
Constraint productions_task_event_fk FOREIGN KEY (Event_ID) REFERENCES TECH_REQUIREMENT(Event_ID));

```

```

Create table PRODUCTION_COMPANY(
ID Number(7) Not Null,
Name Varchar2(20) Not Null,
Contact Varchar2(100) Not Null,

```

```

Constraint production_company_pk PRIMARY KEY (ID),
Constraint production_company_fk FOREIGN KEY (ID) REFERENCES CLIENT(ID);

Create table SCHOOL(
ID Number(7) Not Null,
Department Varchar2(100) Not Null,
Contact Varchar2(100) Not Null,
Constraint school_pk PRIMARY KEY (ID),
Constraint school_fk FOREIGN KEY (ID) REFERENCES CLIENT(ID));

Create table COPRODUCTION(
ID Number(7) Not Null,
Project_Manager_ID Number(7) Not Null,
Constraint coproduction_pk PRIMARY KEY (ID),
Constraint coproduction_fk FOREIGN KEY (ID) REFERENCES CLIENT(ID));

/* Run Oracle specific command to display table structure in DB      */

describe FOH_TASK;
describe STAFF;
describe PRODUCTIONS_TASK;
describe EVENT;
describe TECH_REQUIREMENTS;
describe THEATRE;
describe TIME_FRAME;
describe CLIENT_EVENT;
describe CLIENT;
describe PRODUCTION_COMPANY;
describe SCHOOL;
describe COPRODUCTION;

/* show constraints for each table */

COMMIT;

```

B. THE DML (INSERTION OF DATA IN ORACLE)

```

/* script name: LOADBPAC.SQL                               */
/* purpose: Load Oracle tables for Baruch Performing   */
   Arts Center (BPAC) productions team                  */
/* date: 20 Oct 2014                                     */
/* owner: Fangzhou Cheng                                */

/* make sure tables are empty before adding records     */

delete from FOH_TASK;
delete from STAFF;
delete from PRODUCTIONS_TASK;
delete from EVENT;
delete from TECH_REQUIREMENT;
delete from THEATRE;
delete from TIME_FRAME;
delete from CLIENT;

```

```

delete from PRODUCTION_COMPANY;
delete from SCHOOL;
delete from COPRODUCTION;

/* load all tables for testing purpose */
```

insert into THEATRE values (1, 'Engelman Recital Hall','55 Lexington Ave., NYC');
insert into THEATRE values (2, 'Mason Hall','17 Lexington Ave. at 23rd St, NYC');
insert into THEATRE values (3, 'Nagelberg Theater','55 Lexington Ave, NYC');
insert into THEATRE values (4, 'Bernie West Theater','17 Lexington Ave @ 23rd St., NYC');

insert into STAFF values (1, 'John','Malatesta','Admin');
insert into STAFF values (2, 'Ariadne','Condos','Admin');
insert into STAFF values (3, 'Robert','McGinnis','Productions');
insert into STAFF values (4, 'Rachel','Gilmore','Productions');
insert into STAFF values (5, 'Geoffrey','Barnes','Productions');
insert into STAFF values (6, 'Tsubasa','Kamei','Productions');
insert into STAFF values (7, 'Paul','Riznyk','Productions');
insert into STAFF values (8, 'Brian','Sierra','Productions');
insert into STAFF values (9, 'Justin','Chick','Productions');
insert into STAFF values (10, 'Robert','Bronstein','FOH');
insert into STAFF values (11, 'Justin','Chick','FOH');
insert into STAFF values (12, 'Fama','Gueye','Admin');
insert into STAFF values (13, 'Mecca','Meyers','Admin');
insert into STAFF values (14, 'Brian','Sierra','Productions');
insert into STAFF values (15, 'Joan','Weinberger','Admin');
insert into STAFF values (16, 'Jeffrey','Wigton','Boxoffice');
insert into STAFF values (17, 'Sana','Shaheed','Boxoffice');
insert into STAFF values (18, 'Liz','Skollar','Boxoffice');

insert into CLIENT values (1, 'Coproduction');
insert into CLIENT values (2, 'Production Company');
insert into CLIENT values (3, 'Coproduction');
insert into CLIENT values (4, 'Production Company');
insert into CLIENT values (5, 'Production Company');
insert into CLIENT values (6, 'School');
insert into CLIENT values (7, 'Coproduction');
insert into CLIENT values (8, 'School');

insert into EVENT values (1, 1, 3, 'Play of the Western World', 'All recorded music; No Video Tape', 'General Seating; 1 House Manager plus 3 Ushars for all event with audience; 15 Minute Intermission', 'Ticket Sales through our box office online; Tickets Sales through our box office in person during open hours; Phone Sales through Ovation Tix', 'Listing in our Weekly Eblast; BPAC flyering (We do not provide fliers)', 'Reception: TBD', to_timestamp('25-JUL-14','DD-MON-RR HH:MI AM'), to_timestamp('19-SEP-14','DD-MON-RR HH:MI AM'), to_timestamp('03-OCT-14','DD-MON-RR HH:MI AM'), to_timestamp('10-OCT-14','DD-MON-RR HH:MI AM'));
insert into EVENT values (2, 1, 3, 'Karen Finley: WRITTEN IN SAND', "", "", "", to_timestamp("",'DD-MON-RR HH:MI AM'), to_timestamp("",'DD-MON-RR HH:MI AM'), to_timestamp("",'DD-MON-RR HH:MI AM'), to_timestamp("",'DD-MON-RR HH:MI AM'));
insert into EVENT values (3, 3, 4, 'All About Amy/ Barrio Boy/ Aban/ Khorshid', "", "", "", to_timestamp("",'DD-MON-RR HH:MI AM'), to_timestamp("",'DD-MON-RR HH:MI AM'), to_timestamp("",'DD-MON-RR HH:MI AM'), to_timestamp("",'DD-MON-RR HH:MI AM'));
insert into EVENT values (4, 7, 3, 'Playboy of the Western World', "", "", "", to_timestamp("",'DD-MON-RR HH:MI AM'), to_timestamp("",'DD-MON-RR HH:MI AM'), to_timestamp("",'DD-MON-RR HH:MI AM'));

```

insert into EVENT values ( 5, 6, 1, '6th Annual Baruch College Holiday Concert: "A Not So Silent Night"', "", "", "", "", to_timestamp("'DD-MON-RR HH:MI AM'), to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"));
insert into EVENT values ( 6, 1, 3, 'GRIND: THE MOVIE', "", "", "", to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"));
insert into EVENT values ( 7, 2, 3, 'Murakami Music: Stories of Loss and Nostalgia', "", "", "", to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"));
insert into EVENT values ( 8, 4, 3, 'A Wake or a Wedding', "", "", "", to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"));
insert into EVENT values ( 9, 5, 1, 'MAC presents They Write The Songs', "", "", "", to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"));
insert into EVENT values ( 10, 8, 1, 'Journey to Planet Earth: "Extreme Realities"', "", "", "", to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"), to_timestamp("'DD-MON-RR HH:MI AM"));

insert into TIME_FRAME values (to_timestamp('21-OCT-14 08.00 PM','DD-MON-RR HH:MI AM'), to_timestamp('21-OCT-14 09.30 PM','DD-MON-RR HH:MI AM'), 3, 2);
insert into TIME_FRAME values (to_timestamp('24-OCT-14 07.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('21-OCT-14 09.00 PM','DD-MON-RR HH.MI AM'), 3, 1);
insert into TIME_FRAME values (to_timestamp('22-OCT-14 07.30 PM','DD-MON-RR HH.MI AM'), to_timestamp('22-OCT-14 09.30 PM','DD-MON-RR HH.MI AM'), 4, 3);
insert into TIME_FRAME values (to_timestamp('22-OCT-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('22-OCT-14 10.00 PM','DD-MON-RR HH.MI AM'), 3, 4);
insert into TIME_FRAME values (to_timestamp('23-OCT-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('23-OCT-14 10.00 PM','DD-MON-RR HH.MI AM'), 3, 4);
insert into TIME_FRAME values (to_timestamp('16-DEC-14 07.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('16-DEC-14 08.00 PM','DD-MON-RR HH.MI AM'), 1, 5);
insert into TIME_FRAME values (to_timestamp('27-OCT-14 07.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('23-OCT-14 09.00 PM','DD-MON-RR HH.MI AM'), 3, 6);
insert into TIME_FRAME values (to_timestamp('01-NOV-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('01-NOV-14 10.00 PM','DD-MON-RR HH.MI AM'), 3, 7);
insert into TIME_FRAME values (to_timestamp('13-NOV-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('13-NOV-14 10.00 PM','DD-MON-RR HH.MI AM'), 3, 8);
insert into TIME_FRAME values (to_timestamp('14-NOV-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('14-NOV-14 10.00 PM','DD-MON-RR HH.MI AM'), 3, 8);
insert into TIME_FRAME values (to_timestamp('15-NOV-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('15-NOV-14 10.00 PM','DD-MON-RR HH.MI AM'), 3, 8);
insert into TIME_FRAME values (to_timestamp('16-NOV-14 03.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('16-NOV-14 3.00 PM','DD-MON-RR HH.MI AM'), 3, 8);
insert into TIME_FRAME values (to_timestamp('16-NOV-14 04.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('16-NOV-14 6.00 PM','DD-MON-RR HH.MI AM'), 1, 9);
insert into TIME_FRAME values (to_timestamp('02-DEC-14 06.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('02-DEC-14 9.00 PM','DD-MON-RR HH.MI AM'), 1, 10);

insert into FOH_TASK values ( 10, 1, to_timestamp('24-OCT-14 07.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('21-OCT-14 09.00 PM','DD-MON-RR HH.MI AM'));
insert into FOH_TASK values ( 10, 2, to_timestamp('21-OCT-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('21-OCT-14 09.30 PM','DD-MON-RR HH.MI AM'));
insert into FOH_TASK values ( 11, 3, to_timestamp('22-OCT-14 07.30 PM','DD-MON-RR HH.MI AM'), to_timestamp('22-OCT-14 09.30 PM','DD-MON-RR HH.MI AM'));

```

```

insert into FOH_TASK values ( 10, 4, to_timestamp('22-OCT-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('22-OCT-14 10.00 PM','DD-MON-RR HH.MI AM'));
insert into FOH_TASK values ( 11, 4, to_timestamp('23-OCT-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('23-OCT-14 10.00 PM','DD-MON-RR HH.MI AM'));
insert into FOH_TASK values ( 10, 5, to_timestamp('16-DEC-14 07.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('16-DEC-14 08.00 PM','DD-MON-RR HH.MI AM'));
insert into FOH_TASK values ( 11, 6, to_timestamp('27-OCT-14 07.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('23-OCT-14 9.00 PM','DD-MON-RR HH.MI AM'));
insert into FOH_TASK values ( 10, 7, to_timestamp('01-NOV-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('01-NOV-14 10.00 PM','DD-MON-RR HH.MI AM'));
insert into FOH_TASK values ( 10, 8, to_timestamp('13-NOV-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('13-NOV-14 10.00 PM','DD-MON-RR HH.MI AM'));
insert into FOH_TASK values ( 11, 8, to_timestamp('14-NOV-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('14-NOV-14 10.00 PM','DD-MON-RR HH.MI AM'));
insert into FOH_TASK values ( 10, 8, to_timestamp('15-NOV-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('15-NOV-14 10.00 PM','DD-MON-RR HH.MI AM'));
insert into FOH_TASK values ( 11, 8, to_timestamp('16-NOV-14 03.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('16-NOV-16 3.00 PM','DD-MON-RR HH.MI AM'));
insert into FOH_TASK values ( 10, 9, to_timestamp('16-NOV-14 04.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('16-NOV-14 6.00 PM','DD-MON-RR HH.MI AM'));
insert into FOH_TASK values ( 11, 10, to_timestamp('02-DEC-14 06.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('02-DEC-14 9.00 PM','DD-MON-RR HH.MI AM'));

insert into TECH_REQUIREMENT values ( '1', ' ', ' ', '1', '1', '1', '1', ' ');
insert into TECH_REQUIREMENT values ( '2', '1', '1', '2', ' ', '1', '1', ' ');
insert into TECH_REQUIREMENT values ( '3', '1', '1', '1', '1', ' ', ' ', ' ');
insert into TECH_REQUIREMENT values ( '4', '1', '1', ' ', '5', '1', ' ', ' ');
insert into TECH_REQUIREMENT values ( '5', '1', '1', '2', ' ', ' ', ' ');
insert into TECH_REQUIREMENT values ( '6', ' ', ' ', '1', '2', ' ', ' ', ' ');
insert into TECH_REQUIREMENT values ( '7', ' ', ' ', '1', '2', '1', '1', ' ');
insert into TECH_REQUIREMENT values ( '8', '1', '1', '3', '1', ' ', ' ', ' ');
insert into TECH_REQUIREMENT values ( '9', '1', '1', ' ', '2', ' ', ' ', ' ');
insert into TECH_REQUIREMENT values ( '10', ' ', ' ', '2', ' ', '1', ' ');

insert into PRODUCTION_TASK values ( 9, 1, to_timestamp('24-OCT-14 07.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('21-OCT-14 09.00 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTION_TASK values ( 5, 1, to_timestamp('24-OCT-14 07.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('21-OCT-14 09.00 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTION_TASK values ( 4, 2, to_timestamp('21-OCT-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('21-OCT-14 09.30 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTION_TASK values ( 7, 2, to_timestamp('21-OCT-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('21-OCT-14 09.30 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTION_TASK values ( 7, 3, to_timestamp('22-OCT-14 07.30 PM','DD-MON-RR HH.MI AM'), to_timestamp('22-OCT-14 09.30 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTION_TASK values ( 8, 4, to_timestamp('22-OCT-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('22-OCT-14 10.00 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTION_TASK values ( 6, 4, to_timestamp('22-OCT-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('22-OCT-14 10.00 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTION_TASK values ( 6, 4, to_timestamp('23-OCT-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('23-OCT-14 10.00 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTION_TASK values ( 10, 4, to_timestamp('23-OCT-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('23-OCT-14 10.00 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTION_TASK values ( 14, 8, to_timestamp('13-NOV-14 08.00 PM','DD-MON-RR HH.MI AM'), to_timestamp('13-NOV-14 10.00 PM','DD-MON-RR HH.MI AM'));

```

```

insert into PRODUCTIONS_TASK values ( 11, 8, to_timestamp('14-NOV-14 08.00 PM','DD-MON-RR HH.MI AM'),
to_timestamp('14-NOV-14 10.00 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTIONS_TASK values ( 11, 8, to_timestamp('15-NOV-14 08.00 PM','DD-MON-RR HH.MI AM'),
to_timestamp('15-NOV-14 10.00 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTIONS_TASK values ( 8, 8, to_timestamp('16-NOV-14 03.00 PM','DD-MON-RR HH.MI AM'),
to_timestamp('16-NOV-16 3.00 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTIONS_TASK values ( 10, 9, to_timestamp('16-NOV-14 04.00 PM','DD-MON-RR HH.MI AM'),
to_timestamp('16-NOV-14 6.00 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTIONS_TASK values ( 9, 9, to_timestamp('16-NOV-14 04.00 PM','DD-MON-RR HH.MI AM'),
to_timestamp('16-NOV-14 6.00 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTIONS_TASK values ( 5, 9, to_timestamp('16-NOV-14 04.00 PM','DD-MON-RR HH.MI AM'),
to_timestamp('16-NOV-14 6.00 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTIONS_TASK values ( 13, 10, to_timestamp('02-DEC-14 06.00 PM','DD-MON-RR HH.MI AM'),
to_timestamp('02-DEC-14 9.00 PM','DD-MON-RR HH.MI AM'));
insert into PRODUCTIONS_TASK values ( 4, 10, to_timestamp('02-DEC-14 06.00 PM','DD-MON-RR HH.MI AM'),
to_timestamp('02-DEC-14 9.00 PM','DD-MON-RR HH.MI AM'));

insert into PRODUCTION_COMPANY values ( 2, 'Eunbikimmusic','http://www.eunbikimmusic.com/; the cell: 338W 23rd st
New York, NY 10011; email: thecelltheatre@gmail.org; Tel / Fax : (646) 861-2253');
insert into PRODUCTION_COMPANY values ( 4, 'Encompass New Opera Theatre','Nancy Rhodes: Artistic Director; Tel:
(718) 398-4675; Fax: (718) 398-4684; Email: encompassopera@yahoo.com');
insert into PRODUCTION_COMPANY values ( 5, 'MACnyc','www.MACnyc.com; 212-465-2662; info@macnyc.com;
Manhattan Association of Cabarets and Clubs');

insert into SCHOOL values ( 6, 'BPAC','Robert McGinnis; Tel: 646.312.4086; email: robert.mcginnis@baruch.cuny.edu');
insert into SCHOOL values ( 8, 'Baruch College Task Force on Sustainability','646-312-1000;
Sustainability@baruch.cuny.edu; http://blogs.baruch.cuny.edu/sustainability/');

insert into COPRODUCTION values ( 1, 3);
insert into COPRODUCTION values ( 3, 4);
insert into COPRODUCTION values ( 7, 7);

/* save all changes to table rows */
```

COMMIT;

```

/* run basic queries over every table to verify data */
```

```

SELECT * FROM FOH_TASK;
SELECT * FROM STAFF;
SELECT * FROM PRODUCTIONS_TASK;
SELECT * FROM EVENT;
SELECT * FROM TECH_REQUIREMENT;
SELECT * FROM THEATRE;
SELECT * FROM TIME_FRAME;
SELECT * FROM CLIENT;
SELECT * FROM PRODUCTION_COMPANY;
SELECT * FROM SCHOOL;
SELECT * FROM COPRODUCTION;
```

Event Management Database Retrofit Analysis and Design

BARUCH PERFORMING ART CENTER (BPAC)



Acknowledgement

Thanks Professor Marc Paller for giving great instructions for this project and the whole database class. The textbook Modern Database Management (Hoffer, Ramesh & Topi) has also inspired me a lot.

Thanks Bobby (Robert McGinnis) for providing valuable information about BPAC. This project can't be finished without your substantial support.