

CS-504 Project - 1

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CS 504: Principles of Data Management and Data Mining

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March 11, 2022

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EER Diagram

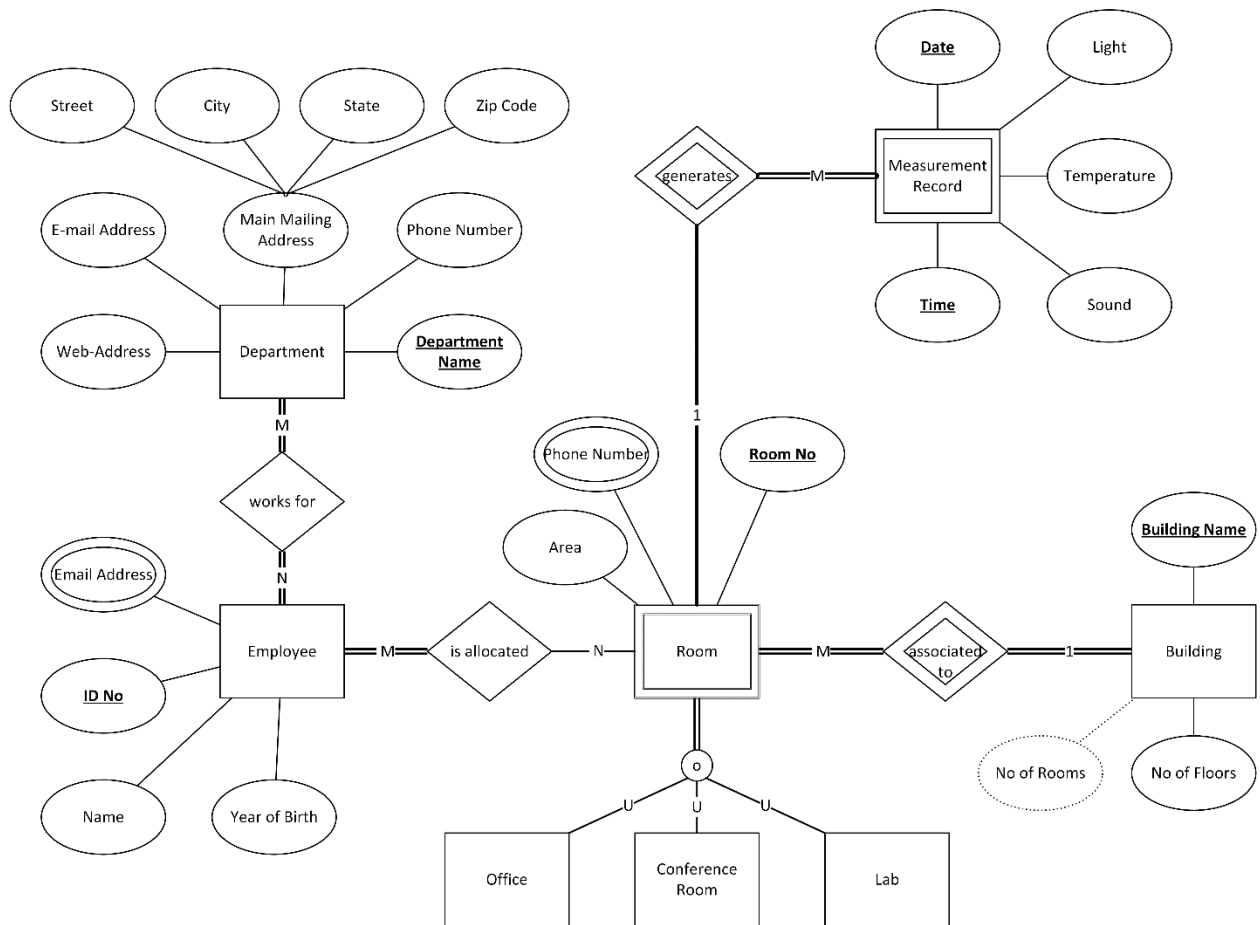


Figure 1 EER Diagram

Relational Schema

Following are the list of all the relations, their respective attributes and domains as well as primary and foreign keys:

Department Relation, Attributes, Domain, and Primary/Foreign Keys

Department

Table 1 Department Relation, Attributes, Domain, and Primary/Foreign Keys

DeptName	VARCHAR(64)	Primary Key
DeptPhone	CHAR(10)	
DeptWebAdd	VARCHAR(128)	
DeptEmail	VARCHAR(64)	
DeptAddStreet	VARCHAR(128)	
DeptAddCity	VARCHAR(128)	
DeptAddState	VARCHAR(64)	
DeptAddZip	VARCHAR(5)	

Employee

Table 2 Employee Relation, Attributes, Domain, and Primary/Foreign Keys

EmpID	INT	Primary Key
EmpName	VARCHAR(64)	
EmpYOB	YEAR	

EmployeeEmail*Table 3 EmployeeEmail Relation, Attributes, Domain, and Primary/Foreign Keys*

EmpID	INT	Primary and Foreign Key
EmpEmail	VARCHAR(64)	Primary Key

WorksFor*Table 4 WorksFor Relation, Attributes, Domain, and Primary/Foreign Keys*

DeptName	VARCHAR(64)	Primary and Foreign Key
EmpID	INT	Primary and Foreign Key

Building*Table 5 Building Relation, Attributes, Domain, and Primary/Foreign Keys*

BldgName	VARCHAR(64)	Primary Key
BldgFloors	INT	
BldgRooms	INT	

Room*Table 6 Room Relation, Attributes, Domain, and Primary/Foreign Keys*

BldgName	VARCHAR(64)	Primary and Foreign Key
RoomNo	INT	Primary Key
RoomArea	INT	
RoomOfficeFlag	BOOLEAN	
RoomConferenceFlag	BOOLEAN	
RoomLabFlag	BOOLEAN	

RoomPhone*Table 7 RoomPhone Relation, Attributes, Domain, and Primary/Foreign Keys*

BldgName	VARCHAR(64)	Primary and Foreign Key
RoomNo	INT	Primary and Foreign Key
RoomPhone	CHAR(10)	Primary Key

RoomAllocation*Table 8 RoomAllocation Relation, Attributes, Domain, and Primary/Foreign Keys*

EmpID	INT	Primary and Foreign Key
BldgName	VARCAHR(64)	Primary and Foreign Key
RoomNo	INT	Primary and Foreign Key

Measurement

Table 9 Measurement Relation, Attributes, Domain, and Primary/Foreign Keys

BldgName	VARCAHR(64)	Primary and Foreign Key
RoomNo	INT	Primary and Foreign Key
MeasTimeStamp	TIMESTAMP	Primary Key
MeasLight	INT	
MeasTemperature	INT	
MeasSound	INT	

Relational Mapping Diagram

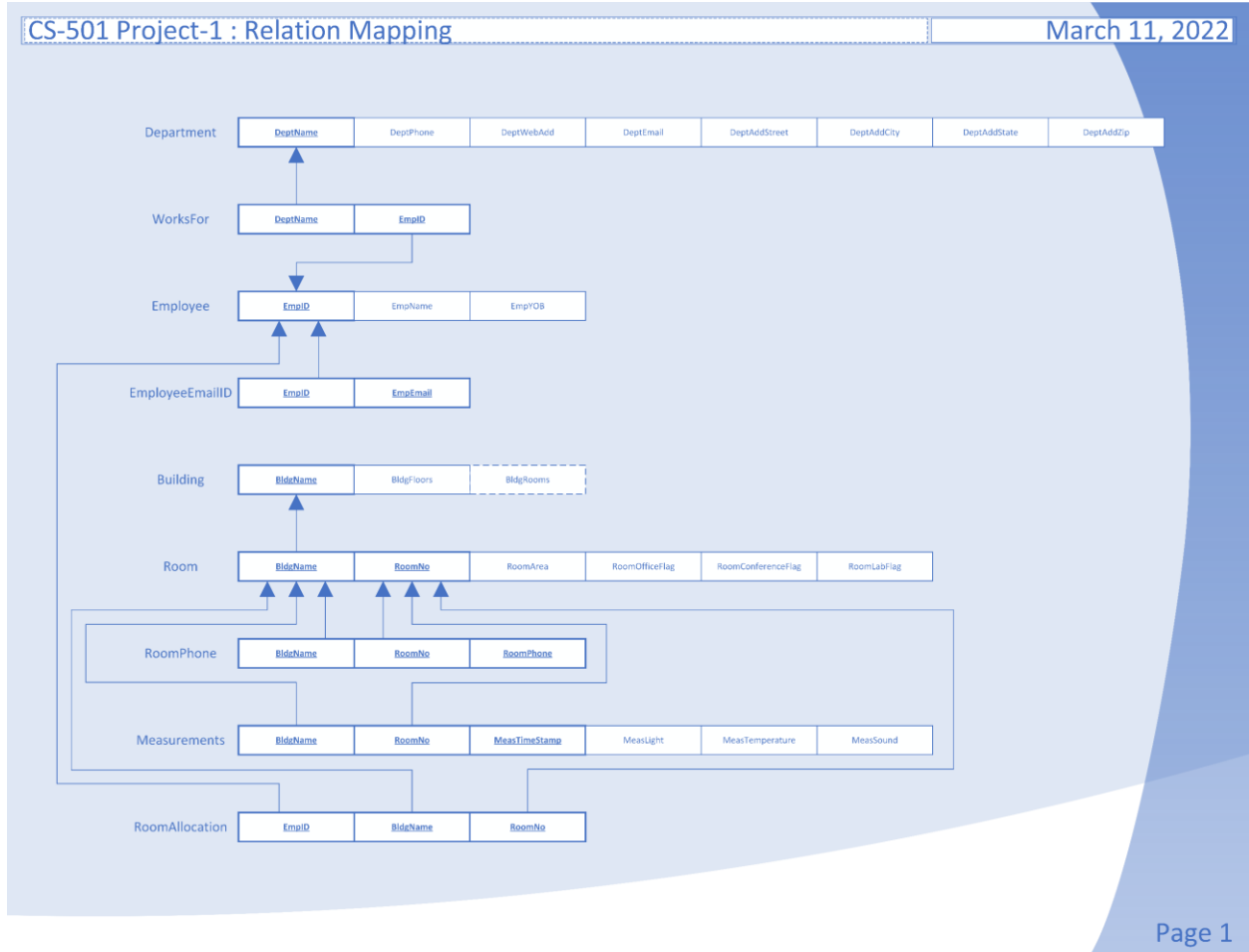


Figure 2 Relational Mapping Diagram

Queries

List the phone number and department name and street address for each department.

```
SELECT DeptPhone, DeptName, DeptAddStreet, DeptAddCity, DeptAddState,
DeptAddZip FROM sgoswam.Department;
```

Table 10 Query Result 1

	DeptPhone	DeptName	DeptAddStreet	DeptAddCity	DeptAddState	DeptAddZip
▶	1234560000	Atmospheric, Oceanic and Earth Sciences	82483 Schamberger Turnpike	Nicolastad	North Carolina	47811
	1234560001	Biology	548 West Walks	Arvelville	West Virginia	09057
	1234560002	Chemistry	24837 Zoe Shoal	Croninton	Arkansas	09646
	1234560003	Computational and Data Sciences	45734 Francis Glen	Leoside	Mississippi	81420
	1234560004	Environmental Sciences	97842 Eveline Vista	Rileyfort	Oregon	08319
	1234560005	Forensic Sciences	7118 Ellis Mill	West Kaelyn	Indiana	84310
	1234560006	Geology	4973 Bella Unions	New Lesleyhaven	Alaska	37709
	1234560007	Mathematics	4780 Reichel Prairie	Heidenreichburgh	California	24598
	1234560008	Neuroscience	4718 Jacobi Summit	Kelliview	Louisiana	46753
	1234560009	Physics and Astronomy	4780 Reichel Prairie	Heidenreichburgh	California	24598
*	NULL	NULL	NULL	NULL	NULL	NULL

Count the number of rooms for each building.

```
SELECT Bldgname, COUNT(RoomNo) FROM sgoswam.Room GROUP BY BldgName;
```

Table 11 Query Result 2

	Bldgname	COUNT(RoomNo)
▶	Aquia Building	7
	Art and Design Building	3
	Entreprise Hall	8
	Exploration Hall	8
	Fenwick Building	11
	Horizon Hall	5
	Nguyen Engineering Building	4
	Research Hall	4

Find the building name and the room number of each lab that is also used as office.

```
SELECT BldgName, RoomNo, RoomLabFlag, RoomConferenceFlag FROM
sgoswam.Room WHERE RoomLabFlag = 1 AND RoomConferenceFlag =1;
```

Table 12 Query Result 3

	BldgName	RoomNo	RoomLabFlag	RoomConferenceFlag
▶	Art and Design Building	3	1	1
	Horizon Hall	1	1	1
*	NULL	NULL	NULL	NULL

Find the average temperature for each room.

```
SELECT BldgName, RoomNo, AVG(MeasTemperature) FROM
sgoswam.Measurement GROUP BY BldgName, RoomNo;
```

Table 13 Query Result 4

	BldgName	RoomNo	AVG(MeasTemperature)
▶	Aquia Building	1	69.6000
	Aquia Building	2	67.0000
	Aquia Building	4	88.6667
	Aquia Building	5	63.7500
	Aquia Building	6	78.3333
	Aquia Building	7	72.1429
	Art and Design Building	1	80.7143
	Art and Design Building	2	61.6667
	Art and Design Building	3	64.2500
	Enterprise Hall	1	92.3333
	Enterprise Hall	2	71.1538
	Enterprise Hall	3	71.5000
	Enterprise Hall	4	75.6000
	Enterprise Hall	5	76.0000
	Enterprise Hall	6	69.8000
	Enterprise Hall	7	79.5000
	Enterprise Hall	8	78.0000
	Exploration Hall	1	91.7500
	Exploration Hall	4	84.8000
	Exploration Hall	5	63.5000
	Exploration Hall	6	77.3333
	Exploration Hall	7	82.0000
	Exploration Hall	8	65.2000
	Fenwick Building	1	68.6667
	Fenwick Building	2	97.0000
	Fenwick Building	3	77.0000
	Fenwick Building	4	87.3333
	Fenwick Building	5	83.6667
	Fenwick Building	6	91.0000
	Fenwick Building	7	96.0000
	Fenwick Building	8	71.2000
	Fenwick Building	9	67.6667
	Fenwick Building	10	75.6667
	Fenwick Building	11	79.2500
	Horizon Hall	1	82.7500
	Horizon Hall	2	86.5000

Department 1 Result 2 Room 3 **Result 4** × Resu

Find the area of each conference room that hasn't had any temperature recorded yet.

```
SELECT R.BldgName, R.RoomNo, R.RoomArea, M.MeasTemperature FROM
sgoswam.Room R
      LEFT JOIN sgoswam.Measurement M ON R.bldgname = M.bldgname AND
R.RoomNo = M.RoomNo
      WHERE M.measTemperature IS NULL;
```

Table 14 Query Result 5

	BldgName	RoomNo	RoomArea	MeasTemperature
▶	Aquia Building	3	4785	NULL
	Exploration Hall	2	2955	NULL
	Exploration Hall	3	3740	NULL
	Horizon Hall	5	2000	NULL

Find the id of each employee who has exactly two email addresses.

```
SELECT EmpID, COUNT(EmpEmail) NoOfEmailIDs FROM sgoswam.EmployeeEmail
GROUP BY EmpID HAVING NoOfEmailIDs = 2;
```

Table 15 Query Result 6

	EmpID	NoOfEmailIDs
▶	1	2
	5	2
	6	2
	7	2
	8	2
	10	2
	12	2
	13	2
	15	2
	18	2
	19	2
	21	2
	22	2
	24	2
	26	2
	28	2
	30	2
	32	2
	33	2
	36	2
	37	2
	38	2
	39	2
	41	2
	43	2
	49	2

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