

Cal Poly Pomona

Database Design and Dev
CIS 3050.E01 - (Su23-OU1st5wk)
Summer 2023

Campground Management System

Name:
Samy Benjelloun

Submitted to:
Dr. Sonya Zhang

June 2023

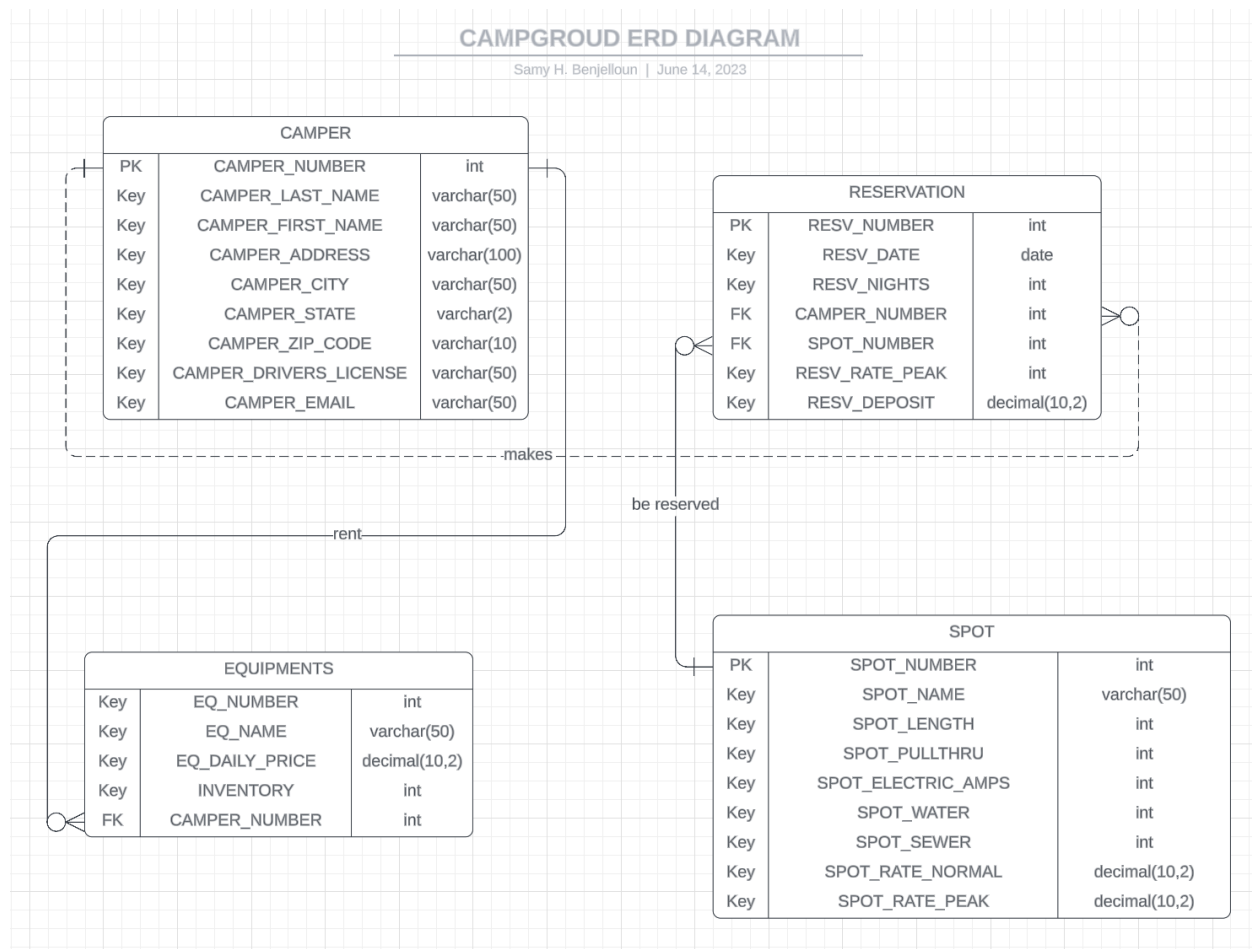
Task 4: Complete the data dictionary and the referential integrity:

Entity	Key (PK and/or FK)	Attribute or Field Name	Data Type* and Field Length
CAMPER	PK	CAMPER_ID	Number / Integer
		CAMPER_LAST_NAME	varchar(50)
		CAMPER_FIRST_NAME	varchar(50)
		CAMPER_ADDRESS	varchar(100)
		CAMPER_CITY	varchar(50)
		CAMPER_STATE	varchar(2)
		CAMPER_ZIP_CODE	varchar(10)
		CAMPER_DRIVERS_LICENSE	varchar(20)
		CAMPER_EMAIL	varchar(50)
SPOT	PK	SPOT_NUMBER	int
		SPOT_NAME	varchar(50)
		SPOT_LENGTH	int
		SPOT_PULLTHRU	int
		SPOT_ELECTRIC_AMPS	int
		SPOT_WATER	int
		SPOT_SEWER	int
		SPOT_RATE_NORMAL	decimal(10,2)
		SPOT_RATE_PEAK	decimal(10,2)
RESERVATION	PK	RESV_NUMBER	int
		RESV_DATE	date
		RESV_NIGHTS	int

	FK	SPOT_NUMBER	int
	FK	CAMPER_NUMBER	int
		RESV_RATE_PEAK	int
		RESV_DEPOSIT	decimal(10,2)
EQUIPMENTS		EQ_NUMBER	int
		EQ_NAME	varchar(50)
		EQ_DAILY_PRICE	decimal(10,2)
		INVENTORY	int
	FK	CAMPER_NUMBER	int

Relationship	Cardinality Constraints**
CAMPER -> RESERVATION	Optional Many
RESERVATION -> CAMPER	Mandatory One
SPOT -> RESERVATION	Optional Many
RESERVATION -> SPOT	Mandatory One
CAMPER -> EQUIPMENT	Optional Many
EQUIPMENT -> CAMPER	Mandatory One

Task 5: Provide a screenshot of the final ERD:



Task 6: Provide all the SQL queries you used to create the Database in MySQL:

```

--
-- Database: `Campground`
--
CREATE DATABASE IF NOT EXISTS `Campground` DEFAULT CHARACTER SET utf8
COLLATE utf8_general_ci;
USE `Campground`;

CREATE TABLE `CAMPER` (
  `CAMPER_NUMBER` int(11) NOT NULL,
  `CAMPER_LAST_NAME` varchar(50) DEFAULT NULL,
  `CAMPER_FIRST_NAME` varchar(50) DEFAULT NULL,
  `CAMPER_ADDRESS` varchar(100) DEFAULT NULL,

```

```
`CAMPER_CITY` varchar(50) DEFAULT NULL,  
`CAMPER_STATE` varchar(2) DEFAULT NULL,  
`CAMPER_ZIP_CODE` varchar(10) DEFAULT NULL,  
`CAMPER_DRIVERS_LICENSE` varchar(50) DEFAULT NULL,  
`CAMPER_EMAIL` varchar(50) DEFAULT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

--

-- Dumping data for table `CAMPER`

--

```
INSERT INTO `CAMPER` (`CAMPER_NUMBER`, `CAMPER_LAST_NAME`,  
`CAMPER_FIRST_NAME`, `CAMPER_ADDRESS`, `CAMPER_CITY`, `CAMPER_STATE`,  
`CAMPER_ZIP_CODE`, `CAMPER_DRIVERS_LICENSE`, `CAMPER_EMAIL`) VALUES  
(1000, 'Jones', 'Jamie', '1278 Essex Pl', 'Birmingham', 'AL', '45251', 'JJ998743-98',  
'jjones@somewhere.com'),  
(1001, 'Schmidt', 'Pat', '4954 Spangled Way', 'El Paso', 'TX', '79919', '87632434',  
'patwonderfu34l@nowhere.net'),  
(1002, 'Williams', 'Clifford', '956 Segull Lane', 'Portland', 'ME', '4108', 'WIL885123',  
'williams98342@foomail.com'),  
(1003, 'Cooper', 'Amanda', 'P. O. Box 998877', 'Portsmouth', 'OH', '45662', '765A876B897',  
'coopera@nowhere.net'),  
(1004, 'Smith', 'Jason', '1127 Main St', 'ElPaso', 'TX', '79919', 'ABC12345',  
'jsmith1980@somewhere.com');
```

-- -----

--

-- Table structure for table `EQUIPMENTS`

--

```
CREATE TABLE `EQUIPMENTS` (  
  `EQ_NUMBER` int(11) NOT NULL,  
  `EQ_NAME` varchar(50) DEFAULT NULL,  
  `EQ_DAILY_PRICE` decimal(10,2) DEFAULT NULL,  
  `INVENTORY` int(11) DEFAULT NULL,  
  `CAMPER_NUMBER` int(11) DEFAULT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

--

```
-- Dumping data for table `EQUIPMENTS`
```

```
--
```

```
INSERT INTO `EQUIPMENTS` (`EQ_NUMBER`, `EQ_NAME`, `EQ_DAILY_PRICE`,  
`INVENTORY`, `CAMPER_NUMBER`) VALUES  
(10003, 'Camp Stoves', '20.00', 10, 1001),  
(10004, 'Kayaks', '40.00', 20, 1001),  
(10004, 'Kayaks', '40.00', 19, 1001),  
(10001, 'Camping Tents', '50.00', 10, 1004),  
(10002, 'Sleeping Bags', '25.00', 20, 1004),  
(10002, 'Sleeping Bags', '25.00', 19, 1004),  
(10005, 'Bicycle', '40.00', 20, 1004),  
(10005, 'Bicycle', '40.00', 19, 1004);
```

```
-- -----
```

```
--
```

```
-- Table structure for table `RESERVATION`
```

```
--
```

```
CREATE TABLE `RESERVATION` (  
  `RESV_NUMBER` int(11) NOT NULL,  
  `RESV_DATE` date DEFAULT NULL,  
  `RESV_NIGHTS` int(11) DEFAULT NULL,  
  `CAMPER_NUMBER` int(11) DEFAULT NULL,  
  `SPOT_NUMBER` int(11) DEFAULT NULL,  
  `RESV_RATE_PEAK` int(11) DEFAULT NULL,  
  `RESV_DEPOSIT` decimal(10,2) DEFAULT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

```
--
```

```
-- Dumping data for table `RESERVATION`
```

```
--
```

```
INSERT INTO `RESERVATION` (`RESV_NUMBER`, `RESV_DATE`, `RESV_NIGHTS`,  
`CAMPER_NUMBER`, `SPOT_NUMBER`, `RESV_RATE_PEAK`, `RESV_DEPOSIT`) VALUES  
(1, '2022-05-11', 2, 1002, 101, 1, '20.00'),  
(2, '2022-05-12', 4, 1000, 103, 1, '25.00'),  
(3, '2022-05-12', 4, 1001, 104, 1, '24.00'),
```

```
(4, '2022-05-20', 1, 1002, 101, 0, '10.00'),  
(5, '2022-06-06', 2, 1002, 101, 0, '0.00');
```

```
-- -----
```

```
--
```

```
-- Table structure for table `SPOT`
```

```
--
```

```
CREATE TABLE `SPOT` (  
  `SPOT_NUMBER` int(11) NOT NULL,  
  `SPOT_NAME` varchar(50) DEFAULT NULL,  
  `SPOT_LENGTH` int(11) DEFAULT NULL,  
  `SPOT_PULLTHRU` int(11) DEFAULT NULL,  
  `SPOT_ELECTRIC_AMPS` int(11) DEFAULT NULL,  
  `SPOT_WATER` int(11) DEFAULT NULL,  
  `SPOT_SEWER` int(11) DEFAULT NULL,  
  `SPOT_RATE_NORMAL` decimal(10,2) DEFAULT NULL,  
  `SPOT_RATE_PEAK` decimal(10,2) DEFAULT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

```
--
```

```
-- Dumping data for table `SPOT`
```

```
--
```

```
INSERT INTO `SPOT` (`SPOT_NUMBER`, `SPOT_NAME`, `SPOT_LENGTH`,  
  `SPOT_PULLTHRU`, `SPOT_ELECTRIC_AMPS`, `SPOT_WATER`, `SPOT_SEWER`,  
  `SPOT_RATE_NORMAL`, `SPOT_RATE_PEAK`) VALUES  
(101, 'The Pines', 55, 1, 50, 1, 1, '35.00', '42.00'),  
(102, 'The Glade', 50, 0, 50, 1, 1, '33.00', '42.00'),  
(103, 'Teardrop Spot', 20, 0, 20, 1, 0, '15.00', '22.00'),  
(104, 'Tent In Trees', 10, 0, 0, 1, 0, '12.00', '15.00');
```

```
--
```

```
-- Indexes for dumped tables
```

```
--
```

```
--
```

```
-- Indexes for table `CAMPER`
```

```
--
```

```
ALTER TABLE `CAMPER`  
  ADD PRIMARY KEY (`CAMPER_NUMBER`);  
  
--  
-- Indexes for table `RESERVATION`  
--  
ALTER TABLE `RESERVATION`  
  ADD PRIMARY KEY (`RESV_NUMBER`),  
  ADD KEY `FK_SPOT_NUMBER` (`SPOT_NUMBER`),  
  ADD KEY `FK_CAMPER_NUMBER` (`CAMPER_NUMBER`);  
  
--  
-- Indexes for table `SPOT`  
--  
ALTER TABLE `SPOT`  
  ADD PRIMARY KEY (`SPOT_NUMBER`);  
  
--  
-- Constraints for dumped tables  
--  
  
--  
-- Constraints for table `RESERVATION`  
--  
ALTER TABLE `RESERVATION`  
  ADD CONSTRAINT `FK_CAMPER_NUMBER` FOREIGN KEY (`CAMPER_NUMBER`)  
REFERENCES `CAMPER` (`CAMPER_NUMBER`),  
  ADD CONSTRAINT `FK_SPOT_NUMBER` FOREIGN KEY (`SPOT_NUMBER`)  
REFERENCES `SPOT` (`SPOT_NUMBER`);  
COMMIT;
```


Task 7: Provide the database design:

CAMPER:

CAMPER		
PK	CAMPER_NUMBER	int
Key	CAMPER_LAST_NAME	varchar(50)
Key	CAMPER_FIRST_NAME	varchar(50)
Key	CAMPER_ADDRESS	varchar(100)
Key	CAMPER_CITY	varchar(50)
Key	CAMPER_STATE	varchar(2)
Key	CAMPER_ZIP_CODE	varchar(10)
Key	CAMPER_DRIVERS_LICENSE	varchar(50)
Key	CAMPER_EMAIL	varchar(50)

RESERVATION:

RESERVATION		
PK	RESV_NUMBER	int
Key	RESV_DATE	date
Key	RESV_NIGHTS	int
FK	CAMPER_NUMBER	int
FK	SPOT_NUMBER	int
Key	RESV_RATE_PEAK	int
Key	RESV_DEPOSIT	decimal(10,2)

SPOT:

SPOT		
PK	SPOT_NUMBER	int
Key	SPOT_NAME	varchar(50)
Key	SPOT_LENGTH	int
Key	SPOT_PULLTHRU	int
Key	SPOT_ELECTRIC_AMPS	int
Key	SPOT_WATER	int
Key	SPOT_SEWER	int
Key	SPOT_RATE_NORMAL	decimal(10,2)
Key	SPOT_RATE_PEAK	decimal(10,2)

EQUIPMENTS:

EQUIPMENTS		
Key	EQ_NUMBER	int
Key	EQ_NAME	varchar(50)
Key	EQ_DAILY_PRICE	decimal(10,2)
Key	INVENTORY	int
FK	CAMPER_NUMBER	int

Task 7: Provide the data populated:

SELECT * FROM CAMPER

		CAMPER_NUMBER	CAMPER_LAST_NAME	CAMPER_FIRST_NAME	CAMPER_ADDRESS	CAMPER_CITY
<input type="checkbox"/>	Edit Copy Delete	1000	Jones	Jamie	1278 Essex Pl	Birmingham
<input type="checkbox"/>	Edit Copy Delete	1001	Schmidt	Pat	4954 Spangled Way	El Paso
<input type="checkbox"/>	Edit Copy Delete	1002	Williams	Clifford	956 Segull Lane	Portland
<input type="checkbox"/>	Edit Copy Delete	1003	Cooper	Amanda	P. O. Box 998877	Portsmouth
<input type="checkbox"/>	Edit Copy Delete	1004	Smith	Jason	1127 Main St	EIPaso

CAMPER_STATE	CAMPER_ZIP_CODE	CAMPER_DRIVERS_LICENSE	CAMPER_EMAIL
AL	45251	JJ998743-98	jjones@somewhere.com
TX	79919	87632434	patwonderfu34l@nowhere.net
ME	4108	WIL885123	williams98342@foomail.com
OH	45662	765A876B897	coopera@nowhere.net
TX	79919	ABC12345	jsmith1980@somewhere.com

SELECT * FROM RESERVATION

		RESV_NUMBER	RESV_DATE	RESV_NIGHTS	CAMPER_NUMBER	SPOT_NUMBER	RESV_RATE_PEAK	RESV_DEPOSIT
<input type="checkbox"/>	Edit Copy Delete	1	2022-05-11	2	1002	101	1	20.00
<input type="checkbox"/>	Edit Copy Delete	2	2022-05-12	4	1000	103	1	25.00
<input type="checkbox"/>	Edit Copy Delete	3	2022-05-12	4	1001	104	1	24.00
<input type="checkbox"/>	Edit Copy Delete	4	2022-05-20	1	1002	101	0	10.00
<input type="checkbox"/>	Edit Copy Delete	5	2022-06-06	2	1002	101	0	0.00

SELECT * FROM SPOT

		SPOT_NUMBER	SPOT_NAME	SPOT_LENGTH	SPOT_PULLTHRU	SPOT_ELECTRIC_AMPS
<input type="checkbox"/>	Edit Copy Delete	101	The Pines	55	1	50
<input type="checkbox"/>	Edit Copy Delete	102	The Glade	50	0	50
<input type="checkbox"/>	Edit Copy Delete	103	Teardrop Spot	20	0	20
<input type="checkbox"/>	Edit Copy Delete	104	Tent In Trees	10	0	0

SPOT_WATER	SPOT_SEWER	SPOT_RATE_NORMAL	SPOT_RATE_PEAK
1	1	35.00	42.00
1	1	33.00	42.00
1	0	15.00	22.00
1	0	12.00	15.00

SELECT * FROM EQUIPMENTS

EQ_NUMBER	EQ_NAME	EQ_DAILY_PRICE	INVENTORY	CAMPER_NUMBER
10003	Camp Stoves	20.00	10	1001
10004	Kayaks	40.00	20	1001
10004	Kayaks	40.00	19	1001
10001	Camping Tents	50.00	10	1004
10002	Sleeping Bags	25.00	20	1004
10002	Sleeping Bags	25.00	19	1004
10005	Bicycle	40.00	20	1004
10005	Bicycle	40.00	19	1004

Task 8: Use SQL to retrieve data from databases:

Query # Description

1. Select all campers and display camper's id, name, and state, sort the results by the state, with customer names in alphabetical order (A-Z) within each state.

```
SELECT CAMPER_NUMBER, CAMPER_FIRST_NAME, CAMPER_LAST_NAME,
CAMPER_STATE
FROM CAMPER
ORDER BY CAMPER_STATE, CAMPER_LAST_NAME, CAMPER_FIRST_NAME;
```

	CAMPER_NUMBER	CAMPER_FIRST_NAME	CAMPER_LAST_NAME	CAMPER_STATE
<input type="checkbox"/> Edit Copy Delete	1000	Jamie	Jones	AL
<input type="checkbox"/> Edit Copy Delete	1002	Clifford	Williams	ME
<input type="checkbox"/> Edit Copy Delete	1003	Amanda	Cooper	OH
<input type="checkbox"/> Edit Copy Delete	1001	Pat	Schmidt	TX
<input type="checkbox"/> Edit Copy Delete	1004	Jason	Smith	TX

2. Select all campers and display camper's id, name, Reservation id, date, and Total due per reservation (in dollar amount, calculated field, use alias), sort the results by Total due (the highest amount first).

```

SELECT
    CAMPER.CAMPER_NUMBER AS Camper_ID,
    CONCAT(CAMPER.CAMPER_FIRST_NAME, ' ', CAMPER.CAMPER_LAST_NAME) AS
Camper_Name,
    RESERVATION.RESV_NUMBER AS Reservation_ID,
    RESERVATION.RESV_DATE AS Reservation_Date,
    ((RESERVATION.RESV_RATE_PEAK * SPOT.SPOT_RATE_PEAK) +
((RESERVATION.RESV_NIGHTS - RESERVATION.RESV_RATE_PEAK) *
SPOT.SPOT_RATE_NORMAL) + RESERVATION.RESV_DEPOSIT) AS Total_Due
FROM
    CAMPER
    JOIN RESERVATION ON CAMPER.CAMPER_NUMBER =
RESERVATION.CAMPER_NUMBER
    JOIN SPOT ON RESERVATION.SPOT_NUMBER = SPOT.SPOT_NUMBER
ORDER BY
    Total_Due DESC;

```

Camper_ID	Camper_Name	Reservation_ID	Reservation_Date	Total_Due ▾ 1
1002	Clifford Williams	1	2022-05-11	97.00
1000	Jamie Jones	2	2022-05-12	92.00
1001	Pat Schmidt	3	2022-05-12	75.00
1002	Clifford Williams	5	2022-06-06	70.00
1002	Clifford Williams	4	2022-05-20	45.00

3. Select the camper(s) who reserved the spot that has the word “Pines” in it after 5/11/2022, display the camper(s)’ name(s), spot name, # of reservation nights, and the deposit, sort the results by date ascending, meaning the oldest ones come first and the most recent ones last.

```

SELECT
    CONCAT(CAMPER.CAMPER_FIRST_NAME, ' ', CAMPER.CAMPER_LAST_NAME) AS
Camper_Name,
    SPOT.SPOT_NAME,
    RESERVATION.RESV_NIGHTS,
    RESERVATION.RESV_DEPOSIT
FROM
    CAMPER
    JOIN RESERVATION ON CAMPER.CAMPER_NUMBER =
RESERVATION.CAMPER_NUMBER
    JOIN SPOT ON RESERVATION.SPOT_NUMBER = SPOT.SPOT_NUMBER
WHERE
    SPOT.SPOT_NAME LIKE '%Pines%'
    AND RESERVATION.RESV_DATE > '2022-05-11'
ORDER BY
    RESERVATION.RESV_DATE ASC;

```

Camper_Name	SPOT_NAME	RESV_NIGHTS	RESV_DEPOSIT
Clifford Williams	The Pines	1	10.00
Clifford Williams	The Pines	2	0.00





4. Select the camper(s) that made more than one reservations, display camper's id and name, average deposit (use alias), and # of reservations (use alias), sort the results by the number of reservations descending, meaning the camper with the highest number of reservations first.

```
SELECT
    CAMPER.CAMPER_NUMBER AS Camper_ID,
    CONCAT(CAMPER.CAMPER_FIRST_NAME, ' ', CAMPER.CAMPER_LAST_NAME) AS
Camper_Name,
    COUNT(RESERVATION.RESV_NIGHTS) AS Number_of_Reservations,
    ROUND(AVG(RESERVATION.RESV_DEPOSIT),2) AS Average_Deposit
FROM
    CAMPER
    JOIN RESERVATION ON CAMPER.CAMPER_NUMBER =
RESERVATION.CAMPER_NUMBER
GROUP BY
    CAMPER.CAMPER_NUMBER, CONCAT(CAMPER.CAMPER_FIRST_NAME, ' ',
CAMPER.CAMPER_LAST_NAME)
HAVING
    COUNT(RESERVATION.RESV_NIGHTS) > 1
ORDER BY
    Number_of_Reservations DESC;
```

Camper_ID	Camper_Name	Number_of_Reservations	Average_Deposit
1002	Clifford Williams	3	10.00

5. Select the spot(s) that didn't get reserved by any camper, display spot id and name. Must use a subquery.

```
SELECT
    SPOT.SPOT_NUMBER,
    SPOT.SPOT_NAME
FROM
    SPOT
WHERE
    SPOT.SPOT_NUMBER NOT IN (
        SELECT
            DISTINCT SPOT_NUMBER
        FROM
            RESERVATION
    );
```

		SPOT_NUMBER	SPOT_NAME
<input type="checkbox"/>	 Edit	 Copy	 Delete
		102	The Glade