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| Fall 2021 PROJECT 1 |
| Student name: Antonio Zea |
| Class (put your class either CS460 or CS580 ) : CS580 |
| Date of your submission:09272021 |
| Write your answers/paste image answers into existing table cells. |

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| 1) Design EER diagram for the narrative on Blackboard in the PDF:  “*RequirementsNarrative on page 276 example 8.20 in 6e.pdf*”  Submit your EER diagram created by a diagram tool such as MS Visio (available on the CS Lab machines or via remote login to the CS Lab machines) or LucidChart.com. |
| 2) Convert the EER schema from part 1 into database relations.  Submit a DB relations schema like the one on pg. 5 of the lecture “CS460-580-ER to Relational DB design.pdf” . Be sure to underline PK with straight line. Use Italic for foreign keys (not shown in that diagram, but should be done for the assignment). |
| 3) Consider the following relations for the database that keeps track of automobile  sales in a car dealership. OPTION refers to some optional equipment installed in a car.  CAR(SerialNumber, Model, Manufacturer, Price)  OPTION(SerialNumber, OptionName, Price)  SALE(SalespersonID, SerialNumber, Date, SalePrice)  SALESPERSON(SalespersonID, Name, Phone)  Produce diagram with arrows analogous to the one in question 2 above to display referential integrity constraints. Display diagrammatically referential integrity constraints by drawing the arrow directed from each foreign key toward the primary key of the relation it references.  ANSWER: |
| 4) Consider the following relations for an order processing database:  CUSTOMER(Cust#, CustName, City)  ORDER(Order#, OrdDate, Cust#, OrdAmount)  ORDER\_ITEM(Order#, Item#, Quantity)  ITEM(Item#, UnitPrice)  SHIPMENT(Order#, Warehouse#, ShipDate)  WAREHOUSE (Warehouse#, City)  Primary keys are underlined. OrdAmount is total dollar amount of an order. OrdDate is date the order was placed. ShipDate is date when order was shipped from the warehouse. An order can be shipped from several warehouses. Specify all foreign keys for this schema. For **each foreign key** specify referential integrity constraints in words. For example: ORDER. Cust# is foreign key and it refers to CUSTOMER.Cust#.  ANSWER:  ORDER.Cust# is foreign key and it refers to CUSTOMER.Cust#  ORDER\_ITEM.Item# is foreign key and it refers to ITEM.Item#  ORDER\_ITEM.Order# is foreign key and it refers to ORDER.Order#  SHIPMENT.Order# is foreign key and it refers to ORDER.Order#  SHIPMENT.Warehouse# is foreign key and it refers to WAREHOUSE.Warehouse# |
| 5) For database schema in question 4 specify SQL DDL statements to define the  database (tables and constraints).  ANSWER:  CREATE TABLE CUSTOMER  (CustNum INT NOT NULL,  CustName VARCHAR(30) NOT NULL,  City VARCHAR(20) NOT NULL,  PRIMARY KEY (CustNum));  CREATE TABLE ORDER\_  (OrderNum INT NOT NULL,  OrdDate DATE NOT NULL,  CustNum INT NOT NULL,  OrdAmount DECIMAL(6,2) NOT NULL,  PRIMARY KEY (OrderNum),  FOREIGN KEY (CustNum) REFERENCES CUSTOMER(CustNum));  CREATE TABLE ITEM  (ItemNum INT NOT NULL,  UnitPrice DECIMAL(6,2) NOT NULL,  PRIMARY KEY (ItemNum));  CREATE TABLE ORDER\_ITEM  (OrderNum INT NOT NULL,  ItemNum INT NOT NULL,  Quantity INT NOT NULL,  PRIMARY KEY (OrderNum, ItemNum),  FOREIGN KEY (OrderNum) REFERENCES ORDER\_(OrderNum),  FOREIGN KEY (ItemNum) REFERENCES ITEM(ItemNum));    CREATE TABLE WAREHOUSE  (WarehouseNum INT NOT NULL,  City VARCHAR(20) NOT NULL,  PRIMARY KEY (WarehouseNum));    CREATE TABLE SHIPMENT  (OrderNum INT NOT NULL,  WarehouseNum INT NOT NULL,  ShipDate DATE NOT NULL,  PRIMARY KEY (OrderNum,WarehouseNum),  FOREIGN KEY (OrderNum) REFERENCES ORDER\_(OrderNum),  FOREIGN KEY (WarehouseNum) REFERENCES WAREHOUSE(WarehouseNum)); |

CS580 additional examples

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| 6) For database schema in question 3 specify SQL DDL statements to define the  database (tables and constraints).  ANSWER:  CREATE TABLE CAR  (SerialNumber INT NOT NULL,  Model VARCHAR(20) NOT NULL,  Manufacturer VARCHAR(20) NOT NULL,  Price DECIMAL(6,2) NOT NULL,  PRIMARY KEY (SerialNumber));  CREATE TABLE OPTION\_  (SerialNumber INT NOT NULL,  OptionName VARCHAR(20) NOT NULL,  Price DECIMAL(6,2) NOT NULL,  PRIMARY KEY (SerialNumber, OptionName),  FOREIGN KEY (SerialNumber) REFERENCES CAR(SerialNumber));  CREATE TABLE SALESPERSON  (SalespersonID INT NOT NULL,  Name VARCHAR(30) NOT NULL,  Phone VARCHAR(10) NOT NULL,  PRIMARY KEY (SalespersonID));  CREATE TABLE SALE  (SalespersonID INT NOT NULL,  SerialNumber INT NOT NULL,  Date\_ DATE NOT NULL,  SalePrice DECIMAL(6,2) NOT NULL,  PRIMARY KEY (SalespersonID, SerialNumber),  FOREIGN KEY (SalespersonID) REFERENCES SALESPERSON(SalespersonID),  FOREIGN KEY (SerialNumber) REFERENCES CAR(SerialNumber)); |