**Relational Schema of Online Auction System:**

**user** ( memberID: char(5) NOT NULL, password: char(10) NOT NULL, name: varchar(50) NOT NULL, phoneNumber: varchar(11) NOT NULL, email: varchar(50) NOT NULL, address: varchar(100) NOT NULL, PRIMARY KEY (memberID))

**enduser** ( userID: char(5) NOT NULL, PRIMARY KEY (userID), FOREIGN KEY (userID) REFERENCES user (memberID) ON DELETE CASCADE)

**customerrepresentative** ( repID: char(5) NOT NULL, PRIMARY KEY (repID), FOREIGN KEY (repID) REFERENCES user (memberID) ON DELETE CASCADE)

**admin** (adminID: char(5) NOT NULL, PRIMARY KEY (adminID), FOREIGN KEY (adminID) REFERENCES user (memberID) ON DELETE CASCADE)

**electronicdevices** (eID: int NOT NULL AUTO\_INCREMENT, isLaptop boolean NOT NULL, isSmartPhone boolean NOT NULL, isTV boolean NOT NULL, name: varchar(50) NOT NULL, height: float, width: float, color: varchar(20), companyOrBrand: varchar(50), version: varchar(10), chargingPort: varchar(50), storage: float, yearOfMake: int NOT NULL, memory: float, quality: varchar(100) NOT NULL, displayTechnology: varchar(50), PRIMARY KEY (eID))

**auction** (auctionID: int NOT NULL AUTO\_INCREMENT, sellerID: char(5) NOT NULL, itemID: int NOT NULL, initialPrice: float NOT NULL, hiddenMinimumPrice: float, standardBiddingIncrement: int NOT NULL, openingDate: datetime, closingDate: datetime, HighestBid: float, highestBidderID: char(5), isWinner: boolean, PRIMARY KEY (auctionID), FOREIGN KEY (sellerID) REFERENCES enduser (userID), FOREIGN KEY (itemID) REFERENCES electronicdevices (eID) ON DELETE CASCADE)

**bid** ( bidID: int NOT NULL AUTO\_INCREMENT, buyerID: char(5) NOT NULL, auctionID: int NOT NULL, currentBidAmount: float, type: varchar(9), placedDate: datetime NOT NULL, isAutoBid: boolean NOT NULL, bidIncrement: float, upperLimit: float, PRIMARY KEY (bidID), FOREIGN KEY (buyerID) REFERENCES enduser (userID), FOREIGN KEY (auctionID) REFERENCES auction (auctionID)

**hasanalert** ( alertID: int NOT NULL AUTO\_INCREMENT, userID: char(5) NOT NULL, auctionID: int NOT NULL, eID: int NOT NULL, alertMessage: varchar(500), PRIMARY KEY (alertID), FOREIGN KEY (userID) REFERENCES enduser (userID), FOREIGN KEY (eID) REFERENCES auction (itemID), FOREIGN KEY (auctionID) REFERENCES auction (auctionID))

**question** ( qID: int NOT NULL AUTO\_INCREMENT, userID: char(5) NOT NULL, repID: char(5), questionText: varchar(100), answerText: varchar(100), PRIMARY KEY (qID), FOREIGN KEY (userID) REFERENCES enduser (userID), FOREIGN KEY (repID) REFERENCES customerrepresentative (repID))

**wishesfor** ( userID: char(5) NOT NULL, eID: int NOT NULL, PRIMARY KEY (userID,eID), FOREIGN KEY (userID) REFERENCES enduser (userID), FOREIGN KEY (eID) REFERENCES electronicdevices (eID))