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User (user id : varchar(10),
      password: varchar(20),
      name: varchar(50),
      email: varchar(50),
      primary key (user id))
Administrative staff member (user id : varchar(10),
                             primary key (user id),
                             foreign key (user id) references User (user id))
Customer representative (user id : varchar(10),
                         primary key (user_id),
                         foreign key (user_id) references User (user_id))
//buyers and sellers
End-user (user id : varchar(10),
          anonymize : bool,
                             //whether end-user wants to show her actual user id and email address in auctions
          primary key (user id),
          foreign key (user id) references User (user id))
//notifications for end-users
Alert (end-user login : varchar(10),
       timestamp : datetime,
       message: varchar(5000),
       primary key (end-user login, message),
       foreign key (end-user login) references End-user (user id))
//customer representatives answers questions asked by end-users
Question (ques id : int,
          ques text : varchar(500),
          ans text : varchar(500),
          status : enum('resolved', 'pending'),
          timestamp asked : datetime,
          timestamp resolved : datetime,
          end-user login : varchar(10),
          customer rep login : varchar(10),
          primary key (ques id),
          foreign key (end-user login) references End-user (user id),
          foreign key (customer rep login) references Customer representative (user id))
//category of items (e.g., vehicles or clothing or computers ...)
Category (cat id : varchar(10),
          name: varchar(20),
          primary key (cat id))
//e.g., truck, motorbike, car for vehicles
Sub-category (cat id : varchar(10),
              subcat id : varchar(10),
              name : varchar(20),
              primary key (cat id, subcat id),
              foreign key (cat id) references Category (cat id))
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Item (cat id : varchar(10),
      subcat id : varchar(10),
      item id : varchar(10),
      name: varchar(20),
      brand: varchar(20),
      year: year, //year of manufacture
      desc_1 : varchar(100),
      desc 2: varchar(100),
      desc 3 : varchar(100),
      created by : varchar(10),
                                  //seller who added the item listing
      primary key (cat id, subcat id, item id),
      foreign key (cat id, subcat id) references Sub-category (cat id, subcat id),
      foreign key (created by) references End-user (user id))
Auction (auction id : int,
         cat id : varchar(10),
         subcat id : varchar(10),
         item id : varchar(10),
         starting time : datetime,
         closing time : datetime,
         initial price : int,
         increment price : int,
         minimum price : int,
                                //(secret) the seller is not willing to give up the item for less
         curr winner : varchar(10),
         curr price : int,
         primary key (auction id),
         foreign key (cat id, subcat id, item id) references Item (cat id, subcat id, item id),
         foreign key (curr winner) references End-user (user id))
Bid (bid id : int,
     user id : varchar(10),
     auction id : int,
     timestamp : datetime,
     amount : int,
     primary key (bid id),
     foreign key (user id) references End-user (user id),
     foreign key (auction id) references Auction (auction id))
//automatically put a bid for a user, every time someone bids higher than her
Auto bid (user id : varchar(10),
          auction id : int,
          start time : datetime.
          upper limit : int,
                                //(secret) maximum amount an end-user is willing to pay
          primary key (user id, auction id),
          foreign key (user id) references End-user (user id),
          foreign key (auction id) references Auction (auction id))
//items which an end-user is interested in buying
Wishlist (user id : varchar(10),
          cat id: varchar(10),
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subcat_id : varchar(10),
item_id : varchar(10),
primary key (user_id, cat_id, subcat_id, item_id),
foreign key (user_id) references End-user (user_id),
foreign key (cat_id, subcat_id, item_id) references Item (cat_id, subcat_id, item_id))
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