Student: _____ Date: 29.10.2018

MIDTERM: Databases - 2018/2019
Software Engineering Department, Computer Science Faculty, NRU HSE
Task Set B

Task 1. Entity-Relationship Modelling.
Coffee point network offers variety of fresh-brewed coffee, and some bite-size food like sandwiches and croissants. Each coffee point in a network has its location data (city and address). Order may contain an unlimited list of drinks and food. Order sharing (multiple customers) is not allowed. Drinks differs in brewing method (e.g. espresso machine, chemex, cold brew), added liquids (e.g., no additions, hot water, milk, fat milk, milk foam, cream, soy milk, almond milk), volume (e.g., micro, small, medium, large), toppings (e.g., whipped cream). Customers may ask for multiple liquids added, e.g. hot water and almond milk, and combine several volumes (micro+micro). Some combinations has its own names like cappuccino=(espresso machine, milk, milk foam), espresso=(espresso machine, micro), double espresso=(espresso machine, micro, micro).
Common customers ordering principle is a first come – first serve, but company offer an online coffee ordering service, so customer is allowed to preorder a drink for a specific moment and take it immediately upon arrival at coffee point. Customer preorder history (using phone number for identification) is to be kept for simple reorder feature and possible future automatic recommendations. Occasional orders (made by walking-by people without preordering) can't be identified, but must be stored with date, time and location data.
Draw an ER diagram for this domain.

Task 2. DDL. Build a relational database scheme for model from Task 1. (CREATE TABLEs).

Task 3. SQL. Find number of drinks with soy milk ordered by customers in Moscow at morning (7:00-11:00).

Task 4. SQL. Find drink volume distribution (number of drinks of each volume) grouped by city of coffee point.

Task 5. SQL. Find returning customers number in previous month grouped by city of coffee point. Customer is returning in given month if her preorder history contains at least single earlier order.

Task 6. SQL. Find top 3 coffee points by number of "large" coffees served in last three days, counting only orders without food.

Task 7. SQL. Find all customers who preorder coffee with some food in the same day in two or more coffee points in different cities.