Ain Shams University
Faculty of Engineering
Computer Engineering and Software Systems

CSE 227: Database Systems (1) – Fall 2018

S H E E T 5

1. For each of the following tables, normalize it to 3rd Normal form.

   a. Order(<u>order_number</u>, order_date, customer_name, customer_address, shipping_address, customer_phone, customer_description, product_code, product_description, quantity, product_price)

   b. Product(<u>product_code</u>, product_description, supplier_id, supplier_name, cost, department_code)

   c. Pet(<u>pet_id</u>, pet_name, pet_type, pet_age, owner, visit_date, procedure_number, procedure_name)

   Invoice(<u>invoice_no</u>, invoice_date, cust_name, cust_address, pet_name, procedure_number, amount)

2. Consider the relation R(A, B, C, D, E, F) that has the following functional dependencies among its attributes:

   $A \rightarrow \{B, C\}$
   $D \rightarrow \{A, F\}$

   a. Prove that the two fields D and E together represent the primary key of this relation.
   b. Decompose R into 3rd normal form.