**EIE3112 Tut 3 Normalization**

Underline = primary key

Italic = foreign key

1NF

Customers/Rent/Owner(CustNo, PropNo, Cname, Paddress, RenStart, RenFinish, Rent, OwnNo, Oname)

2NF

Customers(CustNo, Cname)

Property(PropNo, Paddress, OwnNo, Oname)

RentDetail(*CustNo*, *PropNo*, RenStart, RenFinish, Rent)

3NF

Customers(CustNo, Cname)

Property(PropNo, Paddress, *OwnNo*)

Owner(OwnNo, Oname)

RentDetail(*CustNo*, *PropNo*, RenStart, RenFinish, Rent)

**2.**

1NF

Inspection(PropNo, Paddress, Idate, Itime, Comments, StaffNo, Sname, CarReg)

2NF

Property**(**PropNo, Paddress)

Inspection(*PropNo*, Idate, Itime, Comments, StaffNo, Sname, CarReg)

3NF

Property**(**PropNo, Paddress)

Staff(StaffNo, Sname)

Inspection(*PropNo*, Idate, Itime, Comments, *StaffNo*, CarReg)

**3.**

a) PartNo -> PartDesc

PartNo, PartDesc -> Quantity

PartNo -> Quantity (unlikely)

Quantity -> PartNo (unlikely)

b) No, since there are two 5000.

c) Yes to PartDesc only since P2 and P4 have the same PartDesc.

**4.**

Employee (EmployeeNo, EmployeeName, Salary)

1. EmployeeNo -> EmployeeName, Salary

Correct

1. EmployeeName -> EmployeeNo and/or Salary -> EmployeeNo

Incorrect

1. EmployeeName -> Salary and/or Salary -> EmployeeName

Incorrect

**5.**

Insertion anomaly: cannot add a new product without a salesman

Deletion anomaly: product data maybe lost when deleting salesman data

Modification anomaly: multiple row need to be changed when updating products

**6.**

1NF

Supplier/Part(supplierNo, supplierName, partNo)

2NF

Supplier(supplierNo, supplierName)

Part(partNo)

Supply(*supplierNo*, *partNo*)

**7.**

**2**NF

Supplier(supplierNo, supplierName)

Part(partNo)

Supply(*supplierNo*, *partNo*)

**8.**

a) CustNo -> CustName, CustTel

ProdNo -> ProdName, UnitCost

OrderNo-> CustNo

ProdNo, OrderNo -> Qty

b) 1NF

Customers(CustNo, CustName, CustTel, ProdNo, ProdName, UnitCost, OrderNo, Qty)

2NF = 3NF

Customer(CustNo, CustName, CustTel)

Product(ProdNo, ProdName, UnitCost)

Order(OrderNo, *CustNo*)

Quantity(*OrderNo*, *ProdNo*, Qty)

**9.**

a) Insertion anomaly.

b) Deletion anomaly.

c) Modification anomaly since more than one row need to be edited.

1. Order(PO Number, itemNum, *PartNum*, Qty)

Part(PartNum, Description, Price)

**10.**

a) Symbol, Date -> Close Price, Company, Headquarters

It is because it can be broken down into:

Symbol -> Company, Headquarters

Symbol, Date -> Close Price

b) 2NF

Company(Symbol, Company, Headquarters)

ClosePrice(*Symbol*, Date, Close Price)

c) 3NF

CompanyDetails(Company, Headquarters)

Company(Symbol, *Company*)

ClosePrice(*Symbol*, Date, Close Price)

**11.**

3NF