Task 1.1.

User(Email, shared_subscription* → Subscription(Email)) *only for premium subscription type
User_phone(owner → User(Email), phone_number)
User_Subscription(user → User(Email), subscription → Subscription(Email), payment_type)
Subscription(Email, start_date, end_date, type → Type(ID))
Type(ID, type_name*) *either 'standard' or 'premium'

Task 1.2.

Supermarket(name, owner, year)
Branch(ID, Sname → Supermarket(name), Sowner → Supermarket(owner), city, postal_code)
Customer(ID, name, city)
LoyaltyMembership(bID → Branch(ID), bSname → Branch(Sname), bSowner → Branch(Sowner),
cID → Customer(ID), status, date_enrolled)
Supplier(tax_number, name)
Supplier_phone(phone_number, owner → Supplier(tax_number))
Supplier_Supermarket(supplier → Supplier(tax_number), sName → Supermarket(name),
sOwner → Supermarket(owner))

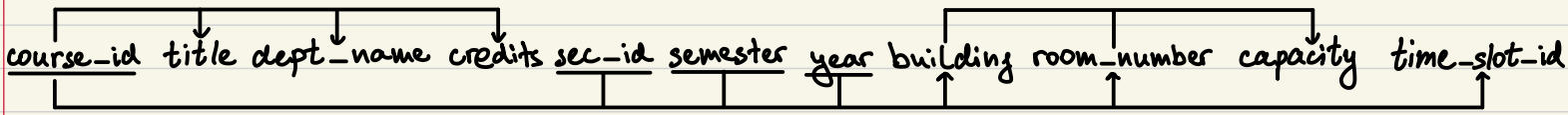
Task 2.1.

{CCODE} → {CNAME, SSN, CADDR, CMAIL, CPHONE, BDATE}
{SSN} → {CNAME, CCODE, CADDR, CMAIL, CPHONE, BDATE}
{BCODE} → {BCITY, BADDR, BMAIL, BPHONE}
{BCITY, BADDR} → {BCODE, BMAIL, BPHONE}
{LNUM} → {LAMOUNT, LCUSTOMER, LBRANCH}
{PLOAN, PNUM} → {PDATE, PAMOUNT, PBRANCH}

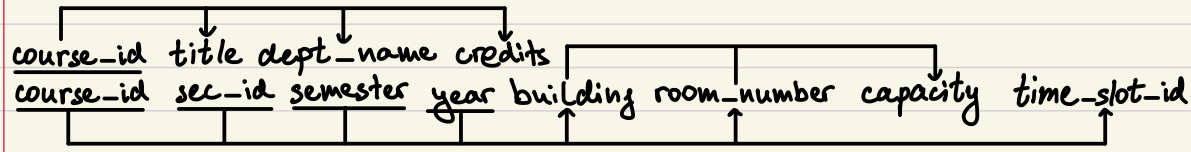
Task 2.2 CUSTOMER(CNAME, CCODE, SSN, CADDR, CMAIL, CPHONE, BDATE)
BRANCH(BCODE, BCITY, BADDR, BMAIL, BPHONE)
LOAN(LNUM, LAMOUNT, LCUSTOMER → CUSTOMER(CCODE), LBRANCH → BRANCH(BCODE))
PAYMENT(PDATE, PAMOUNT, PBRANCH → BRANCH(BCODE), PLOAN → LOAN(LNUM), PNUM)

Task 3.1 Atomicity of attributes can be taken for granted.
The relation is at most 1NF since there are dependencies with determinants which are proper subsets of candidate keys (not 2NF) or are non-candidate keys (not 3NF).
Since there is no primary key set identified, this relation can be considered to be in 1NF if this is not required, but also not in 1NF if it is required.

Task 3.2. (full) 1NF:

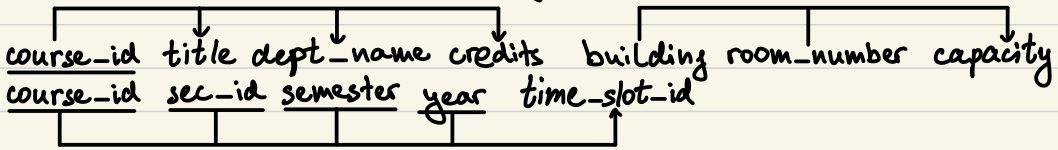


2NF:
{title, dept_name, credits} dependent on {course_id} ⊆ {course_id, sec_id, semester, year}



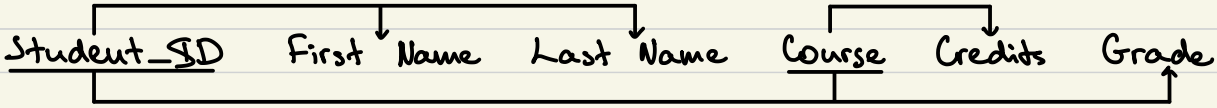
3NF:

{capacity} dependent on {building, room_number} & {course_id, sec_id, semester, year}



Task 4.1. Anatomicity of attributes not achieved (Info). => The table is not in 1NF.

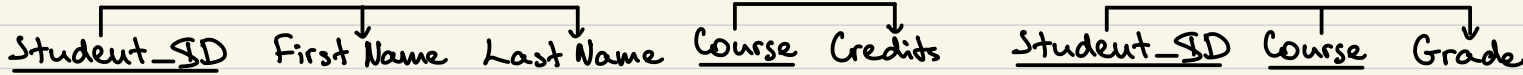
Task 4.2. 1NF:



2NF:

{First Name, Last Name} dependent on {Student_ID} ⊆ {Student_ID, Course}

{Credits} dependent on {Course} ⊆ {Student_ID, Course}



3NF: No non-key attributes depend on non-candidate key attributes => same as 2NF