PRACTICAL ASSIGNMENT 1

UPBank Database

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Task 1

- CLIENTS
- BRANCH
- ATM
- CHEQUE
- SAVINGS
- 32_DAY_DEPOSIT
- CONTRACTS

Task 2

- CLIENTS(u_number, id_number, age, sex, date_of_birth, name(first, middle, last), address(postal(street_address(number, street), locality, postcode), physical(street_address(number, street), locality, postcode)), contact(sms(code, number), telephone(code, number), email), membership(id_proof, physical_proof))
- BRANCH(branch_code, address(street_address(number, street), locality, postcode), operating_hours(open, close), contact(code, number))
- ATM(branch_code, atm_number, cash, last_fill(date, time, company_code))
- CONTRACTS(company_code, start, end)
- CHEQUE(account_number, branch_code, u_number, balance(amount, currency), interest_rate)
- SAVINGS(account_number, branch_code, u_number, balance(amount, currency), interest_rate)
- 32_DAY_DEPOSIT(account_number, branch_code, u_number, balance(amount, currency), interest_rate, notification_date)

Task 3

- CLIENTS:name -> is complex as a name can be split up into first name, middle name(s) and last name.
- CLIENTS:address -> is complex as address can be split into a postal as well as a physical address.
- CLIENTS:address:postal -> is complex as postal can be split into a street address, the locality of the address and the postal code of the area.
- CLIENTS:address:postal:street_address -> is complex as the street address has a street number as well as the street proper.
- CLIENTS:address:physical -> is complex as physical can be split into a street address, the locality of the address and the postal code of the area.
- CLIENTS:address:physical:street_address -> is complex as the street address has a street number as well as the street proper.
- CLIENTS:contact -> is complex due to there being multiple ways to contact including sms, a telephone and email.
- CLIENTS:phone:sms -> is complex as the number is made up of an area code and the number itself.
- CLIENTS:phone:telephone -> -> is complex as the number is made up of an area code and the number itself.

- CLIENTS:membership -> is complex as the membership needs proof of the id_number as well as proof of the physical address.
- BRANCH:address -> is complex as postal can be split into a street address, the locality of the address and the postal code of the area.
- BRANCH:address:street_address -> is complex as the street address has a street number as well as the street proper.
- ATM:last_fill -> is complex as the last fill needs to have a date and a time.

Task 4
- CLIENTS:age -> this is derived from CLIENTS:id_number.
- CLIENTS:date_of_birth -> this is derived from CLIENTS:id_number.
- CLIENTS:sex -> this is derived from CLIENTS:id_number.

Task 5
- 32_DAY_DEPOSIT:notification_date -> this could possibly be NULL due to the client having never attempted to access the funds of the account.

Task 6
1. No, the model will not allow for this additional account. The solution to this problem would be to add an additional attribute to 32_DAY_DEPOSIT named 'sharia'.
2. Yes, the model does allow for the introduction of a USD$ account due to the balance being a composite attribute with an amount and a currency.
3. No, the model will not allow or additional contact methods. The solution to this issue would be to add a multivalued attribute named 'voip' to the composite attribute of CLIENTS:contact.
4. No, the model does not cater for additional verification methods. The solution to this issue would be to make the CLIENTS:membership composite attribute into a multivalued attribute and changing the current attributes to 'type' and 'proof'.

Task 7
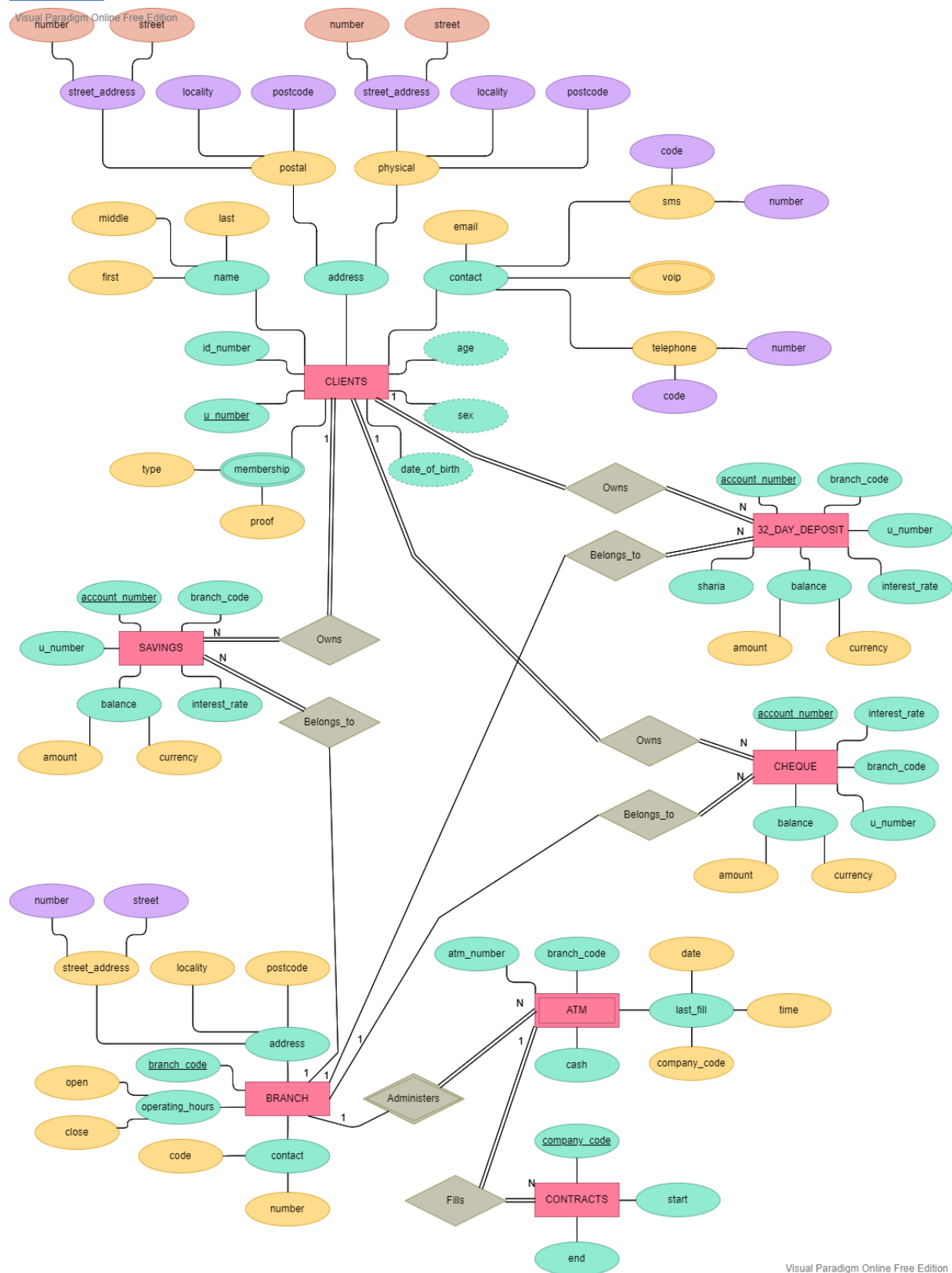
I could not get the weak key to work properly in the drawing software thus I will state it here. Weak Key :- ATM:atm_number