Database- BIG Library

~Entities and its Attributes

1. Library Staff (strong) :|person|
   - LibID <pri>
   - name
   - age
   - address
   - phone
   - email
   - degree*
   - timings(day{name of days}, startTime, stopTime)
   - wages [derived]
   - efficiency [derived]

2. LOG (strong) :|place|
   - logTime <pri>
   - LibID
   - leaveTime
   - hoursWorked [derived]

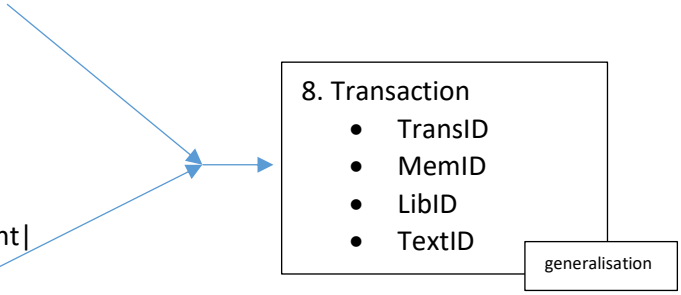
3. Membership (strong) :|event|
   - AadharNo < pri>
   - Image
   - date
   - LibID
   - MemID
   - checkIDBanned*

4. Plans (strong) :|concept|
   - planID <pri>
   - type
   - initialPayment
   - issueCharge
   - penalyCharge(charge, NODays)
   - NoMems [derived]

5. Members (strong) :|person|
   - MemID <pri>
   - Name
   - Addr
   - Phone
   - Email
   - PlanID
   - Dues [Derived]
   - {BooksID-inPoss}

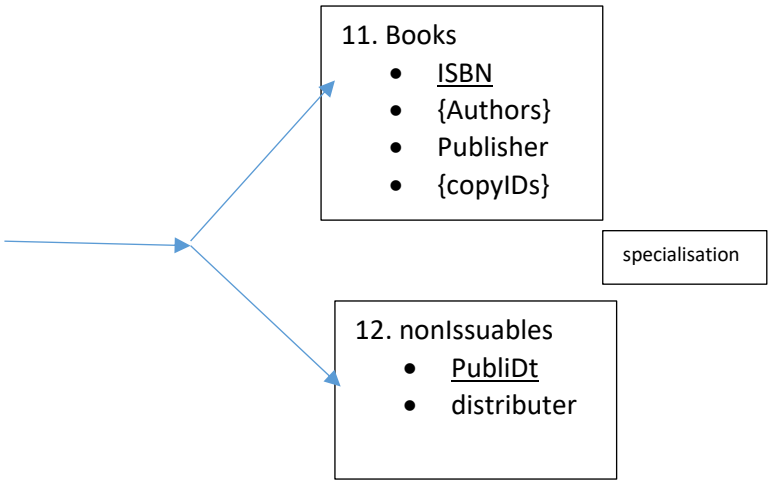
6. Issues (strong) :|event|
   - issueNo. <pri>
   - issuedDt
   - returnDt
   - amount [derived]
   - ifPaid

7. Returns (strong) :|event|
   - returnNo. <pri>
   - DateOfRet



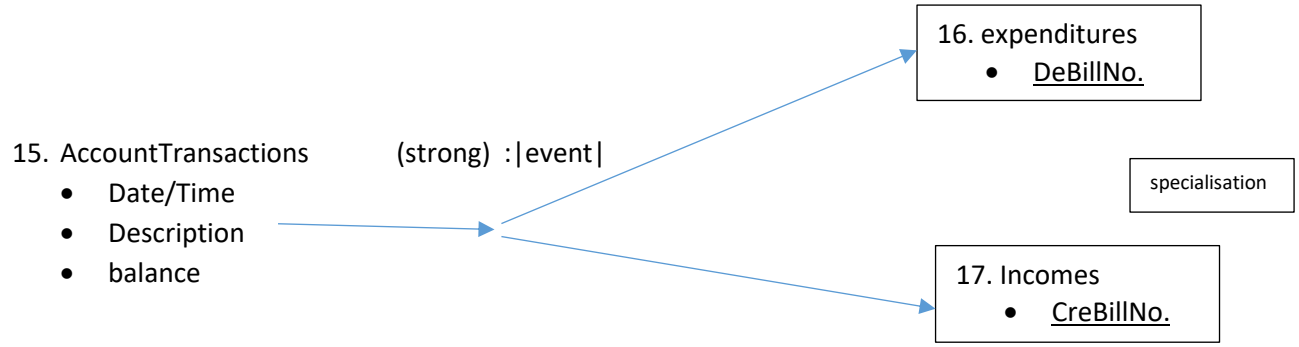
1. FineGen (weak) //indentified by Returns// :|concept|
   - fineID <par>
   - MemID
   - latency [derived]
   - amount [derived]
   - ifPaid

2. Texts (strong) :|thing|
   - TextID <pri>
   - Name
   - {category}
   - Location(section, shelf, rack)
   - language
   - Popularity



13. Vendors (strong) :|person|
   - vendorName <pri>
   - phoneNo
   - ratings

14. orderDetails (strong) :|thing|
   - orderID <pri>
   - date
   - vendorName
   - textID
   - Pricing(price, quantity, disc)
   - TotPrice [derived]



~Relationships and Constraints:

1. Manages <unary>
   - One-to-Many
   - (e) LibraryStaff
   - Desc.Attr-> assignDt

2. signInOut <binary>
   - One-to-One
   - (e) LibraryStaff {partial}
   - (e) LOG {total}

3. Provides <binary>
   - One-to-Many
   - (e) LibraryStaff {partial}
   - (e) Membership {total}

4. Offered <binary>
   - One-to-Many
   - (e) Plans {partial}
   - (e) Membership {total}

5. plansUpdate <ternary>
   - One-to-Many
   - (e) Plans {partial}
   - (e) LibraryStaff {partial}
   - (e) Members {total}
   - Desc.Attr-> date

6. Borrowing <binary>
   - (e) Members(0,5)
   - (e) Issues(1,1)

7. Returning <binary>
   - One-to-Many
   - (e) Members {partial}
   - (e) Returns {partial}

8. calcFine <binary> <<Identifying>>
    - One-to-One
    - (e) Returns {partial}
    - (e) FineGen {total}

9. Search <binary>
    - Many-to-Many
    - (e)Members
    - (e)Texts
    - Desc.Attr-> reportID

10. Update <binary>
    - Many-to-Many
    - (e)Texts {total}
    - (e) LibraryStaff {partial}

11. Order <ternary>
    - One-to-Many
    - (e) LibraryStaff {partial}
    - (e) vendors {partial}
    - (e) orderDetails {total}

12. Maintains <binary>
    - One-to-Many
    - (e) LibraryStaff
    - (e) AccountTransactions

Problem Statement:

The library management database keeps track of **library staffs**, **members**, **books**, and other various units of library. One of the **library staff** is assigned to *manage* other staffs. **Staff**'s *shift* or work timings are recorded in the **log** DB. Library Staffs have various jobs. *Providing* new **membership** to numerous people is one of the important job. Every **membership** is completed by *choosing* a member **plan**. This **plan** can later be *updated* by the **members** under the consent of any **library staff**.

Members have facility to *search* through diverse collection of **texts**, which consists of all categories of books, articles, magazines, newspaper, etc. **Members** can perform various **transactions** like *borrowing* and *returning* of issuable **texts**. A **member** can have atmost 5 books in possession, which are **issued** from the library. **Fine** is *calculated* on every **return** of book and its amount is dependent on member's **plan**. Only **library staffs** have permission to *update* the records of the **texts**. These **texts** are usually *ordered* from selected **vendors**. **Staffs** also *maintains* overall monetary **transactions**-track all **expenses** and **incomes** (fundings and other credits).