CSE 370

Database System

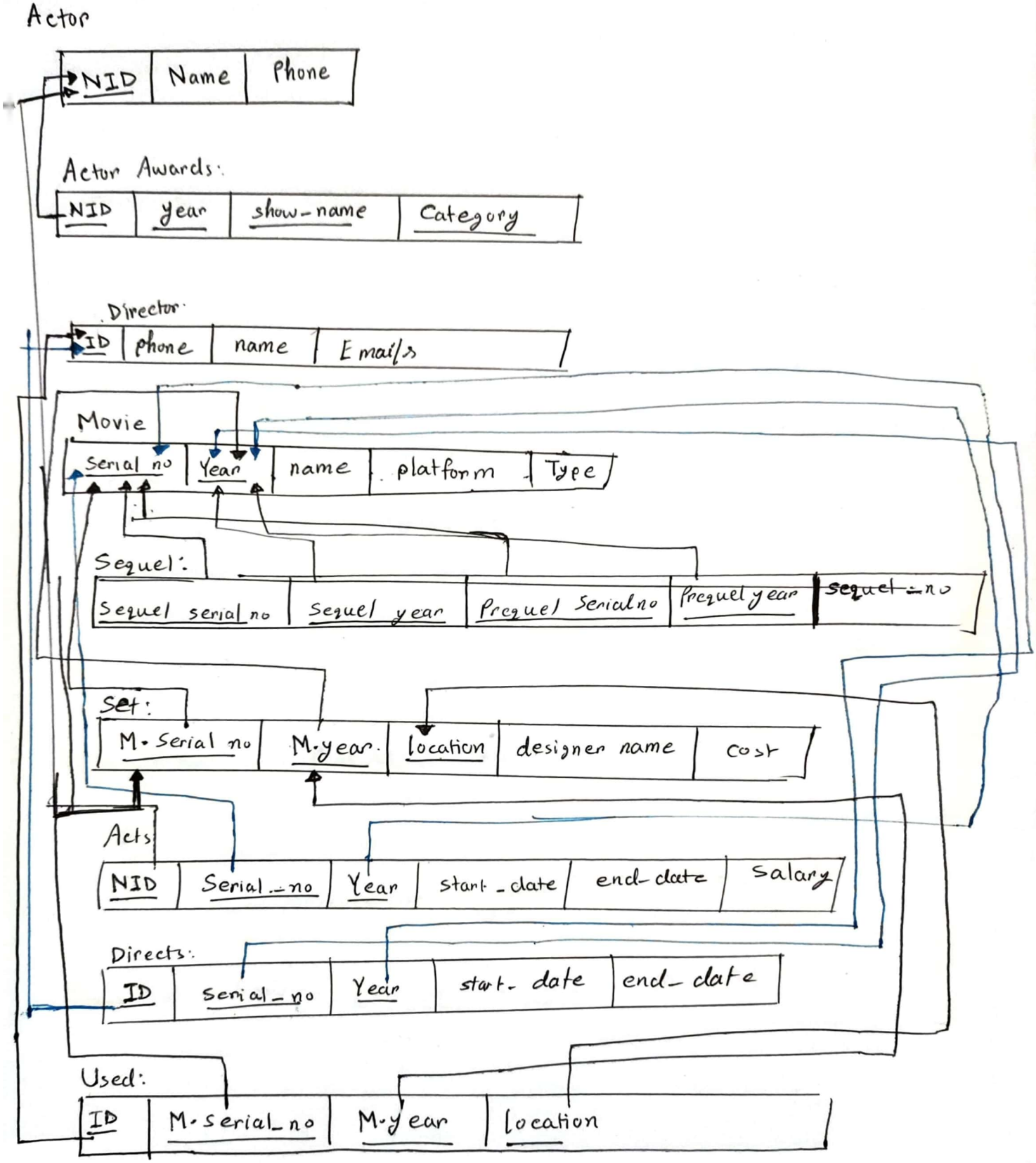
Fall 2023 Final Script

Name: Rejwan Shafi

Student ID: 23291108

Section: 08

Answer to the question no 1



Answer to the question no 2

(a)

The given relation is already in 1NF format as there is no multivalued attribute, neither composite attribute, neither nested relation.

(b)

The relation of (a) is not in 2NF form. As there are partial dependencies in FD1, FD2 and FD3. By applying 2NF Format the schema would look like following.

Customer (<u>Customer ID</u>, Customer Name, customer Contact No)

Flat (<u>flat ID</u>, flat Address, size, start Date, end Date, rent)

Owner (<u>Owner ID</u>, ownerName, owner Contact No, owner NomineeID, owner Nominee Name, owner Nominee Contact No)

Accomodation Service (<u>Customer ID</u>, <u>flat ID</u>, <u>Owner ID</u>, agreement ID)

(e)

The relation of (b) is not in 3NF form. As there are transisitive dependencies. By applying 3NF it would look like following.

Customer (CustomerID, customerName, customerContactNo)

Flat (flatID, flatAddress, size, startDate, endDate)

Rent (size, startDate, endDate, rent)

Owner (OwnerID, ownerName, ownerContactNo, ownerNomineeID)

Nominee (ownerNomineeID, ownerNomineeName, ownerNomineeContactNo)

AccomodationService (CustomerID, flatID, OwnerID, agreementID)

Answer to the question no 3

(a)

" SELECT title, ISBN, year, price from Book order by year asc. ";

(b)

SELECT b.borrowerNo, count (*) from BookLoan b Inner Join Borrower c on b.borrowerNo = c.borrowerNo Group by b.borrowerNo having count (copyNo) > 5 .;

(c)

Select * from Book where year = "2016" and price > All (select price from Book where year = "2014" or year = "2015");

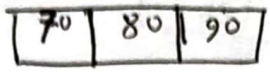
(d)

" Select borrowerNo, avg (price) from (BookLoan inner join Borrower on BookLoan.borrowerNo = Borrower.borrowerNo) inner join Book on Bookloan.copyNo = Book.copyNo group by borrowerNo where Address = " Baker Street" ";

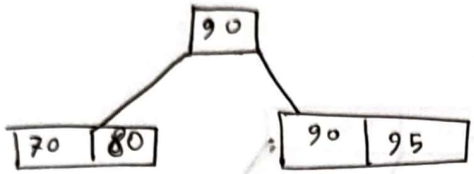
Answer to the question no 4

(a)

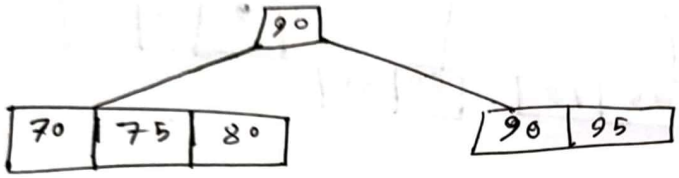
inserting 80, 70, 90



insert 95



insert 75



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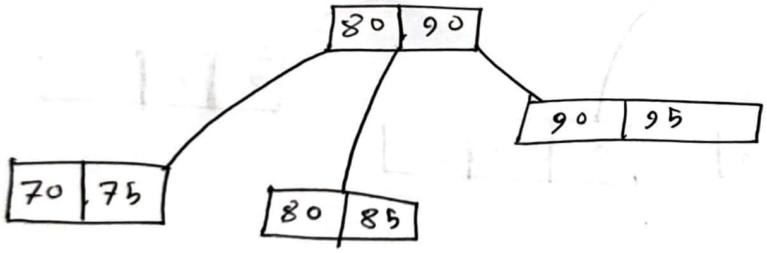
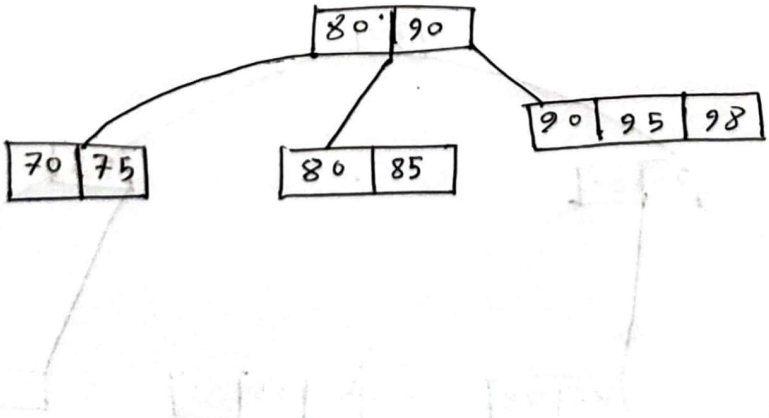
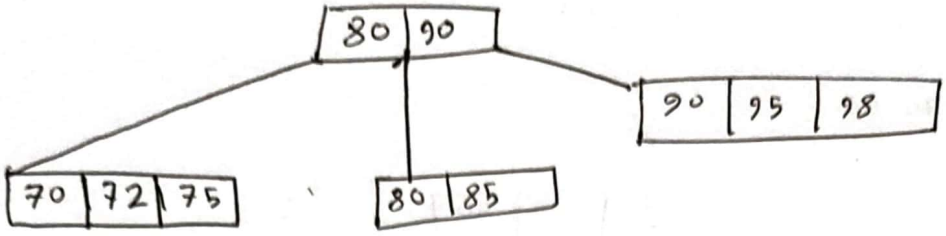


insert 98



insert 72



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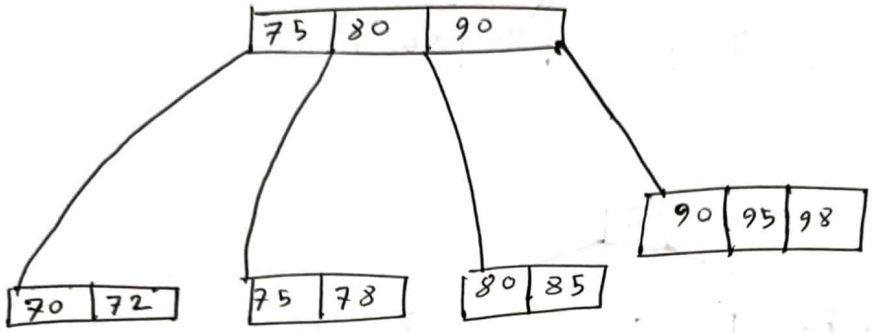

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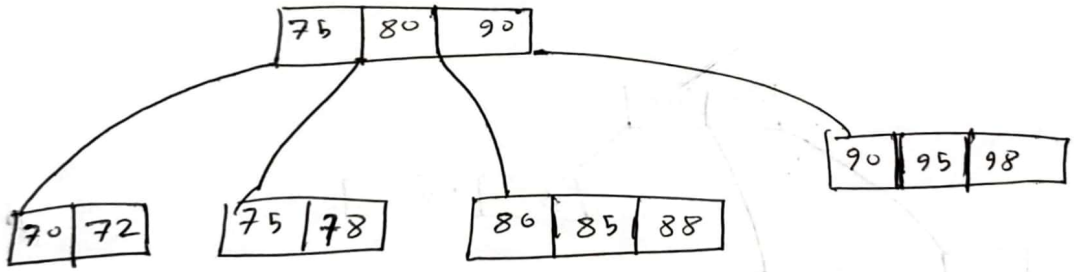

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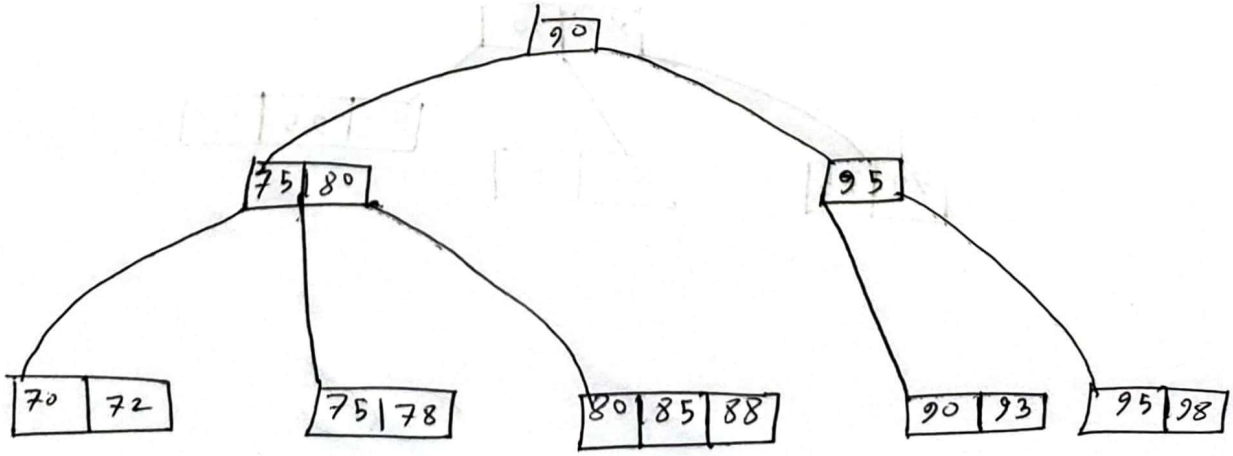
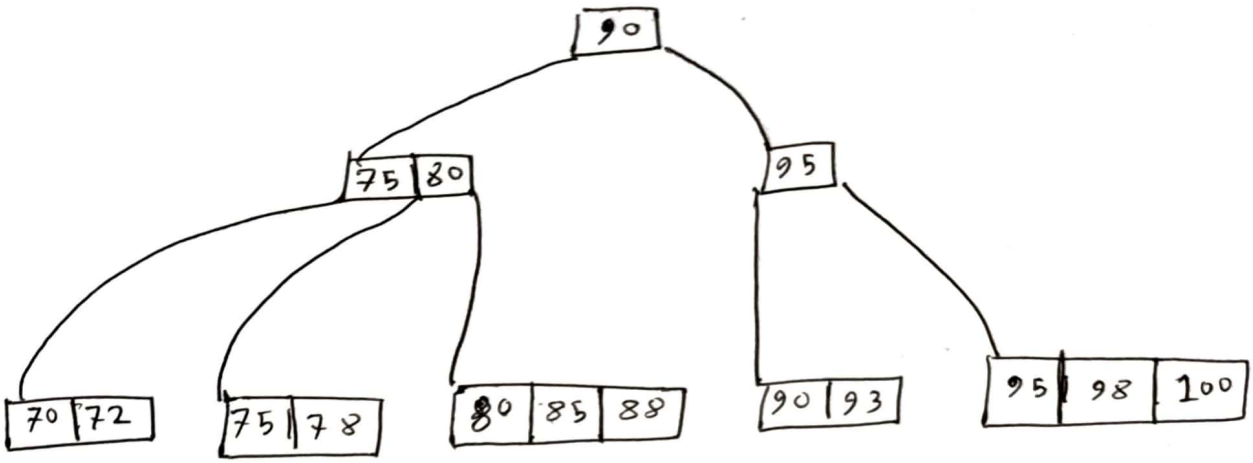


insert 100



(P.T.O)

(b)

$h(YN5) = (89 + 78 + 53)^2$

$= 47961$

$= (7+9) \% 5$

$= 1.$

$\therefore h(YN5) = 1.$

$\therefore h(QAG) = (81 + 65 + 54)^2$

$= 40000$

$= (0+0) \% 5$

$\therefore h(QAG) = 5 \equiv 0$ [As there are 5 bucket so we have to place in on Bucket 0]

$\therefore h(FJ7) = (70 + 74 + 55)^2 = 39601$

$= (9+6) \% 5$

$\therefore h(FJ7) = 0$

$\therefore$ Similarly,

$h(JZG) = 2$

$h(WW4) = 1$

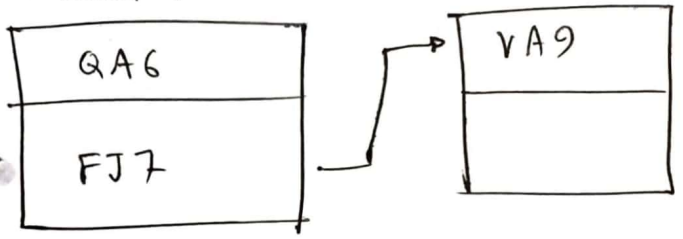
$h(NF7) = 3$

$h(SM8) = 2$

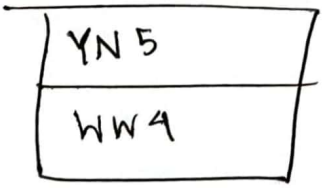
$h(VA9) = 0$

So the hash index table would be

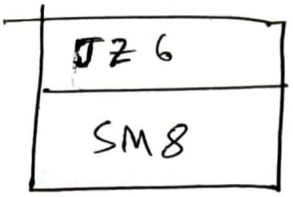
Bucket 0



Bucket 1



Bucket 2



Bucket 3

Bucket 4