

CSE 370  
Database System  
Fall 2023 Final Script

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Section: 08

# Answer to the question no 1

13  
13

Actor

<u>NID</u>	Name	Phone
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Actor Awards:

<u>NID</u>	<u>year</u>	<u>show-name</u>	<u>Category</u>
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Director:

<u>ID</u>	phone	name	Email/s
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Movie

<u>Serial no</u>	<u>Year</u>	name	platform	Type
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Sequel:

<u>Sequel serial no</u>	<u>Sequel year</u>	<u>Prequel Serial no</u>	<u>Prequel year</u>	<u>sequel-no</u>
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Set:

<u>M-Serial no</u>	<u>M-year</u>	<u>location</u>	designer name	cost
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Acts

<u>NID</u>	<u>Serial-no</u>	<u>Year</u>	start-date	end-date	Salary
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Directs:

<u>ID</u>	<u>Serial-no</u>	<u>Year</u>	start-date	end-date
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Used:

<u>ID</u>	<u>M-Serial-no</u>	<u>M-year</u>	<u>location</u>
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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 (CustomerID, CustomerName, customer Contact No)

Flat (FlatID, flat Address, size, start Date, end Date, rent)

Owner (OwnerID, ownerName, owner ContactNo, owner NomineeID,  
owner Nominee Name, owner Nominee Contact No)

Accommodation Service (CustomerID, FlatID, OwnerID, agreement ID)

(c)

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

Customer (CustomerID, customer Name, customer Contact No)

Flat (flatID, flat Address, size, start Date, end Date)

Rent (size, start Date, end Date, rent)

Owner (OwnerID, owner Name, owner Contact No, owner NomineeID)

Nominee (owner NomineeID, owner Nominee Name, owner Nominee Contact No)

Accommodation Service (CustomerID, flatID, OwnerID, agreement ID)

Answer to the question no 3

8.5  
10

(a)

" SELECT title, ISBN, year, price from Book order by year,  
asc. "; — 0.5

(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

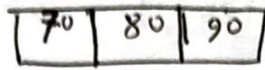
where ~~b.address~~ Address = " Baker Street ";

Answer to the question no 4

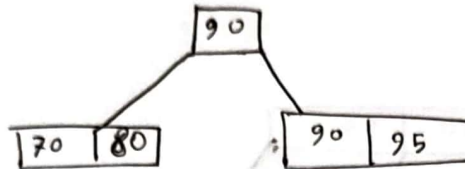
(a)

11.5  
12

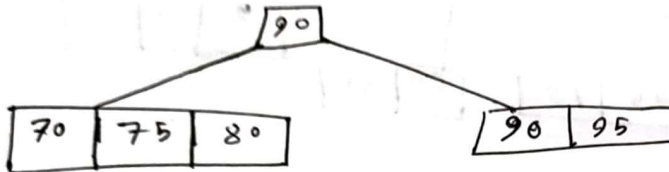
inserting 80, 70, 90



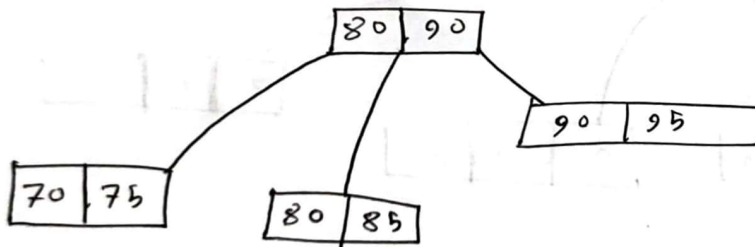
insert 95



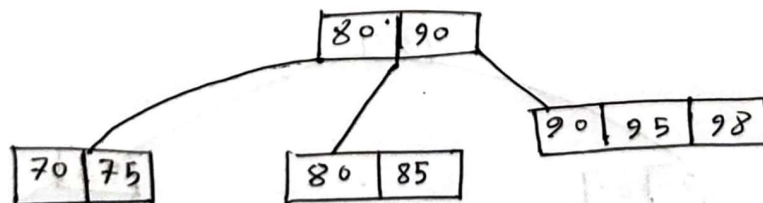
insert 75



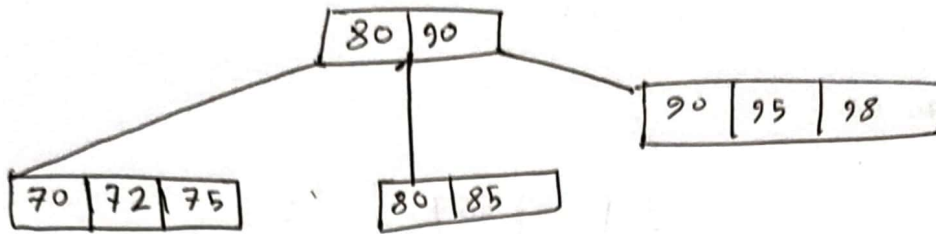
insert 85



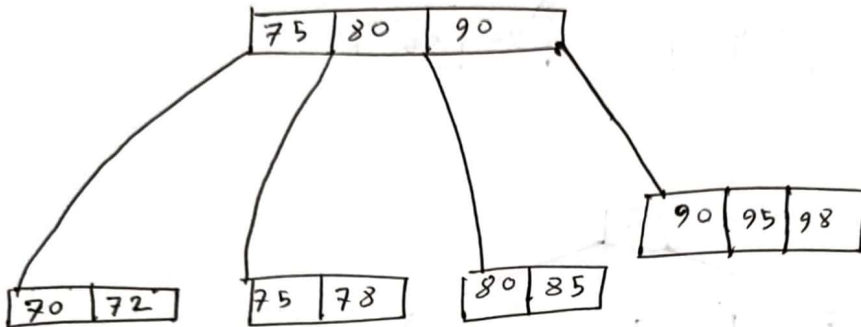
insert 98



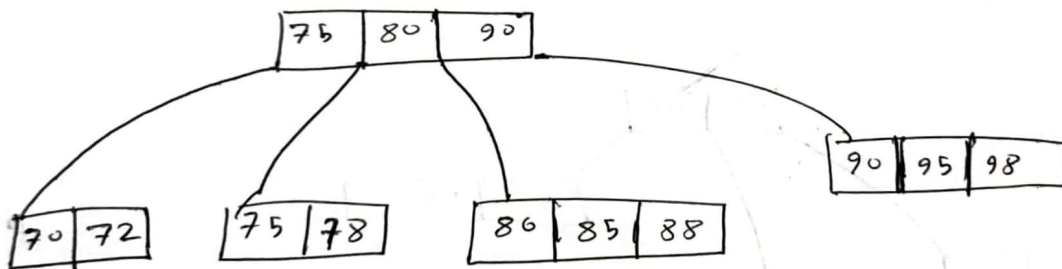
insert 72



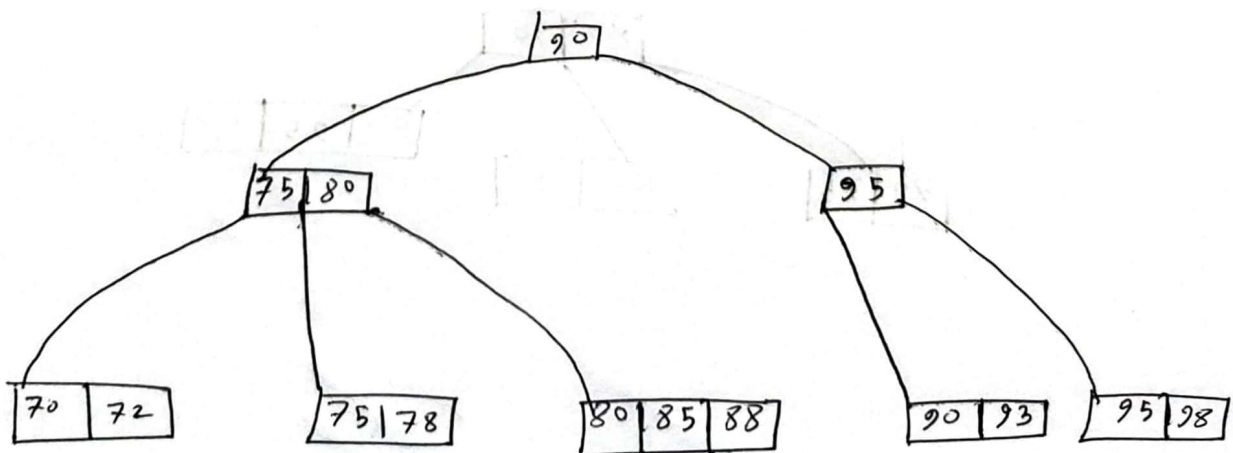
insert 78



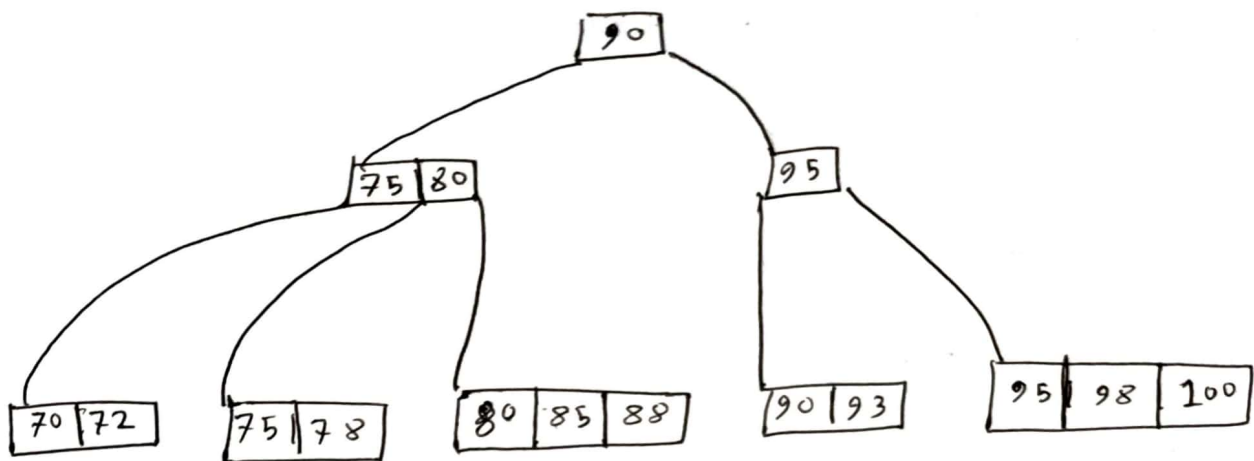
insert 88



insert 93



insert 100



(P.T.U)



(b)

$$\begin{aligned}h(YN5) &= \cancel{89+78} (89+78+53)^2 \\&= \cancel{28} 47961 \\&= (7+9) \% 5 \\&= 1.\end{aligned}$$

$$\therefore h(YN5) = 1.$$

$$\begin{aligned}\therefore h(QAG) &= (81+65+54)^2 \\&= 40000 \\&= (0+0) \% 5\end{aligned}$$

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

$$\begin{aligned}\therefore h(FJ7) &= (70+74+55)^2 = 39601 \\&= (9+6) \% 5\end{aligned}$$

$$\therefore h(FJ7) = 0.$$

$\therefore$  Similarly,

$$h(JZ6) = 2$$

$$h(WW4) = 1$$

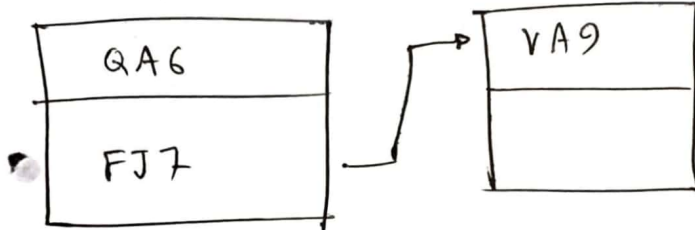
$$h(NF7) = 3$$

$$h(SM8) = 2$$

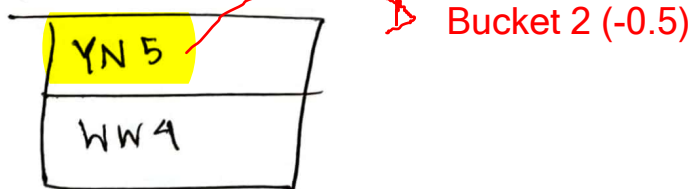
$$h(VA9) = 0$$

So the hash index table would be

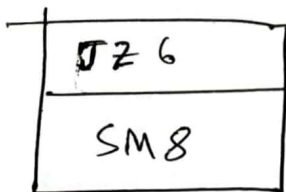
Bucket 0



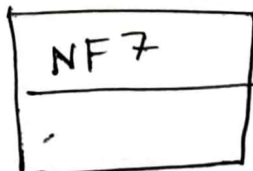
Bucket 1



Bucket 2



Bucket 3



Bucket 4

