COMP 3005
Assignment 3
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Question 1.1

p[portid, name](SUBSCRIBERS)
p [name, area, office, station](SUBSCRIBERS)

Question 1.2

((SUBSCRIBERS x LINES) * SERVICES)
p[name, adress, portid](S[Scode * CFB](R)

Question 1.3

p[portid](s [state=busy](TRUCK_CHANNELS)
BUSY-IDLE

Question 1.4

p[call_id_orig](CALLS)
p(call_id)(Calls)s(call.portID = Truck.portID)(Trunk)
s[call.term] = trunks.portID(TRUNK)

Question 1.5

p[portID](CALLS)
p(port_id)(lines)s.lines.portID = calls.orig])(calls) AND s[tcode = “BSY”](Trunk)

Question 1.6

p[portid](Trunks) (s [state=IDLE] (Truck_Channels))

Question 1.7

p [port_id, name] [Subscribers]
COUNT [name, adress, portid] (SUB_SERVICE)

Question 1.8
(lines * facilities) = t1
(trunk * t1) = t2
t2[area=905, office=238, station=1234](CALLS)

Question 1.9

(n1 * service) = t1
(t1 * lines) = t2
(t2 * facilities) = t3
[service, line](service_name)
Count[service:portid]

Question 1.10

T1=count [service, line] (SERVICE-SUBSCIRBERS)
T2=count[lines : service](service * service_subscribers)
p(portID)[s[line(portid)] (s [count >= 1 and t2] (count doesn't not equal t1.count*(t2))

Question 2.1

A) Candidate Keys: F = UV, UZ

B) All functional dependencies are satisfied for this requirement.

C) 3NF Form Produced for loss-less join: [F={U,V | W,X,Y,Z,W →Y, Z → V}]

Question 2.2

A) Candidate Keys: F = U,V

B) All functional dependencies are satisfied for this requirement.

C) 3NF Form Produced for loss-less join: [F={U,V | W,X,Y,Z,W →W, W→ Z}]

Question 2.3

A) Candidate keys: F = V

B) All functional dependencies are satisfied for this requirement.

C) 3NF Form Produced for loss-less join: [F={U,V | W,X,Y,Z,V →Z, V→ U}]

More On Next Page

Question 2.4

For this question the we must prove the following by the theory that

$$F1 = F2$$

From This we can separate the equation into two different forms, the left side, and the right side

$$A\ B \rightarrow C\ D\ E\ F\ G$$
$$A\ B \rightarrow G$$
$$Left = Right$$

With this solution for the left , Lets say that Left = F1

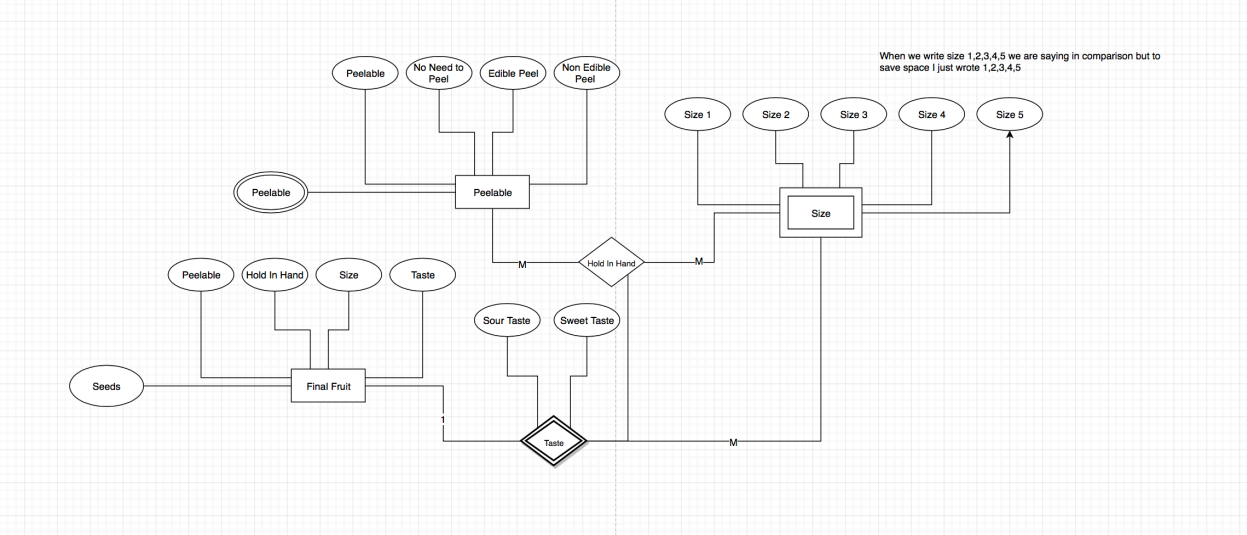
$A\ B \rightarrow C\ D\ E\ F\ G$	$\rightarrow$	* Given
$A\ B \rightarrow G$		*Decomposition
$A\ B \rightarrow C\ D\ E\ F$		*Decomposition

And that for this case Right = F2

$A \rightarrow C$	$\rightarrow$	*Given
$A\ B \rightarrow C\ B$	$\rightarrow$	*Augmentation
$A\ B \rightarrow C\ D\ E\ F$	$\rightarrow$	*Translation
$A\ B \rightarrow C\ D\ E\ F\ G$		*Union

We can see that the left is equal to the right, giving us the proof that the F1 = F2

$$\therefore Left = Right$$
$$\therefore F1 = F2$$



Question 3.2.1

3.2.2

1.1 http://localhost:300/api/size/size_4/.

// This url shows the size of the fruit that the client is looking at and what part of the query they are in

1.2 http://localhost:300/api/hold_in_hand/pealable

// This url shows when the client goes to the pealable section of the fruit query

1.3 http://localhost:300/api/pealable/edablepeal

// This url shows when the client gets to the edible peel portion of the query and what direction they can go in

1.4 http://localhost:300/api/pealable?size=taste=sour

// This url shows when the client ends at the sour taste and finishes the query there

1.5 http://localhost:300/api/pealable?size=taste=sour=final_fruit!

// This url would be a hypothetical link if the user went though all stages of the site and finishes his query.

1.6 http://localhost:300/api/pealable?size=size4=taste=!hold_in_hand?

// This url would return if the client went all the way and then went back to change if they could hold in their hand