

سوال ۱۰ (۱۰)

$$F = \{A \rightarrow E, BC \rightarrow F, E \rightarrow G, AC \rightarrow D, E \rightarrow H, BG \rightarrow C, GH \rightarrow C\}$$

۱) $A \rightarrow C$:

$$A \rightarrow E \xrightarrow{E \rightarrow H} A \rightarrow H$$

$$\xrightarrow{E \rightarrow G} A \rightarrow G \Rightarrow A \rightarrow GH \xrightarrow{GH \rightarrow C} A \rightarrow C \checkmark$$

۲) $BD \rightarrow C$: *قوله اشتباه نیست*

۳) $A \rightarrow HC$:

$$A \rightarrow C \text{ (دستگاه به هم)}$$

$$\Rightarrow A \rightarrow HC \checkmark$$

$$A \rightarrow E \xrightarrow{E \rightarrow H} A \rightarrow H$$

۴) $EH \rightarrow C$:

$$E \rightarrow G$$

$$\Rightarrow EH \rightarrow G \checkmark$$

$$GH \rightarrow C$$

$$A \rightarrow E$$

$$BE \rightarrow D \xrightarrow{E \rightarrow B} \boxed{E \rightarrow D}$$

$$AD \rightarrow BE: AD \rightarrow B \xrightarrow{A \rightarrow E, E \rightarrow B} \boxed{A \rightarrow B}$$

$$AD \rightarrow E \rightarrow \boxed{A \rightarrow E}$$

$$BDH \rightarrow E \xrightarrow{D \rightarrow H} \boxed{BD \rightarrow E}$$

$$AC \rightarrow E \rightarrow \boxed{A \rightarrow E}$$

$$F \rightarrow A$$

$$E \rightarrow B$$

$$D \rightarrow H$$

$$BG \rightarrow F$$

$$CD \rightarrow A$$



$$A \rightarrow E$$

$$E \rightarrow D$$

$$BD \rightarrow E$$

$$F \rightarrow A$$

$$E \rightarrow B$$

$$D \rightarrow H$$

$$BG \rightarrow F$$

$$CD \rightarrow A$$

Course

Course ID	Professor	Phone#	name
428	Kezani	10023	Math
466	Qafari	225606	Physics

Student

Name	Student ID
Omid	1022
Yeganeh	3210
Mahdi	2161
Sahar	7590

Scores

Student ID	Course ID	Score
1022	428	18
1022	466	16
3210	482	18
2161	482	16
7590	466	18
7590	482	16

سوال ۱۵) الف) یک جدول خالی بنویسید

<u>C-name</u>	<u>b-name</u>	<u>L.no</u>	<u>amount</u>	<u>A.no</u>	<u>balance</u>
Ali	Kaj	46	1500	Null	Null
Reza	Bahar	61	7500	Null	Null
Hamed	Kaj	53	3000	Null	Null

ب)

<u>Cname</u>	<u>b-name</u>	<u>Lno</u>	<u>amount</u>	<u>A-No</u>	<u>balance</u>
Ali	Bahar	Null	Null	96	6200
Ahmad	Kaj	Null	Null	82	4400

ج)

<u>Cname</u>	<u>b-name</u>	<u>Lno</u>	<u>amount</u>	<u>A-no</u>	<u>balance</u>
Ali	Kaj	46	1500	Null	Null
Reza	Bahar	61	7500	Null	Null
Hamed	Kaj	53	3000	Null	Null
Ali	Bahar	Null	Null	96	6200
Ahmad	Kaj	Null	Null	82	4400

$$a) \pi_{Bname} (\sigma_{Branch})$$

$$b) Melli_branches \leftarrow \pi_{B\#} (\sigma_{Bname = "melli"} Branch)$$

$$Melli_Accs \leftarrow \pi_{A\#} (Melli_branches \bowtie Account \mid Melli_branches.B\# = Account.B\#)$$

$$Melli_Depos \leftarrow \pi_{C\#} (Melli_Accs \bowtie Deposit \mid Melli_Accs.A\# = Deposit.A\#)$$

$$Melli_Customers \leftarrow \pi_{CName} (Melli_Depos \bowtie Customer \mid Melli_Dep.C\# = Customer.C\#)$$

$$c) All_customers \leftarrow \pi_{C\#} Customers$$

$$customers_w_borrow \leftarrow \pi_{C\#} Borrow$$

$$customers_w_no_borrow \leftarrow All_customers - customers_w_borrow$$

$$Result \leftarrow \pi_{CName} (Customers \bowtie customers_w_no_borrow \mid Customer.C\# = customers_w_no_borrow.C\#)$$

d) $\text{Melli-Deps} \bowtie \text{CH}$ مشترک یک ستون

است در بخش (b) نتایج است

$\text{Melli-Customers-w-borrow} \leftarrow \pi_{\text{C\#}} (\text{Melli-Deps} \bowtie \text{Borrow})$
 $\text{Melli-Deps.C\#} = \text{Borrow.C\#}$

$\text{Results} \leftarrow \pi_{\text{CName}} (\text{Customer} \bowtie \text{Melli-customers-w-borrow})$
 $\text{Customer.C\#} = \text{Melli-customers-w-borrow.C\#}$

e) $\text{Teh-branches} \leftarrow \pi_{\text{B\#}} (\sigma_{\text{Bcity} = \text{"Tehran"}} \text{Branch})$

$\text{Teh-custs-branches} \leftarrow \pi_{\text{B\#,C\#}} (\text{Teh-branches} \bowtie \text{Branch})$
 $\text{Teh-branches.B\#} = \text{Branch.B\#}$

$\text{Results.C\#} \leftarrow \text{Teh-custs-branches} \div \text{Teh-branches}$

$\text{Results} \leftarrow \pi_{\text{CName}} (\text{Results.C\#} \bowtie \text{Customer})$
 $\text{Results.C\#} = \text{Customer.C\#}$

ف) Pasargad-branches $\leftarrow \pi_{B\#} (\sigma_{BName = "pasargad"} \text{Branch})$

Pasargad-cust-brw $\leftarrow \pi_{C\#} (\text{Pasargad-branches} \bowtie \text{Borrow})$
 $\text{Pasargad-branches.B\#} = \text{Borrow.B\#}$

Psgd-1k-Acc $\leftarrow \pi_{A\#} (\sigma_{\text{Account} \bowtie \text{Pasargad-branches}} \text{Account})$
 $\text{Account.B\#} = \text{Pasargad-branches.B\#}$
 $\text{Balance} > 1000$

C\#-result $\leftarrow \pi_{C\#} (\text{Psgd-1k-Acc} \bowtie \text{Deposit})$
 $\text{Psgd-1k-Acc.A\#} = \text{Deposit.A\#}$

result $\leftarrow \pi_{CName} (\text{Customer} \bowtie \text{C\#-result})$
 $\text{Customer.C\#} = \text{C\#-result.C\#}$