

One of the possible solution for Q1 is:

The table 01 given in question 1 is not in INF.

After converting in to 1 NF:

Department ID	Department Name	House ID	House Name	Team Name	Team_Member ID	Team_Member Name	Section	Batch
1	Computer Science	H1	The Controllers	Vectors	K18-1234	Mehran	D	2018
1	Computer Science	H1	The Controllers	Vectors	K18-3214	Anas	D	2018
1	Computer Science	H1	The Controllers	Vectors	K18-1244	Muneeb	F	2018
3	Software Engineering	H3	The Sentinels	Decoders	K19-1122	Ahmed	E	2019
3	Software Engineering	H3	The Sentinels	Decoders	K19-1136	Kazim	A	2019
3	Software Engineering	H3	The Sentinels	Decoders	K19-1213	Anas	D	2019
2	Artificial Intelligence	H2	The Duelists	Right Side	K21-1121	Rafay	C	2021
2	Artificial Intelligence	H2	The Duelists	Right Side	K21-2323	Ahmed	C	2021
2	Artificial Intelligence	H2	The Duelists	Right Side	K21-3421	Ahsan	C	2021
1	Computer Science	H2	The Duelists	Bring it Own	K18-2311	Ihtisham	D	2018
1	Computer Science	H2	The Duelists	Bring it Own	K18-1100	Musaib	J	2018
1	Computer Science	H2	The Duelists	Bring it Own	K18-1101	Ibrahim	J	2018

According to definition of Functional dependency, the prime attribute is Team Member ID as it has unique value in each row.

FD1:

Team Member ID -> Department ID, Department Name, House ID, House Name, Team Name, Team Member Name, Section, Batch.

FD2:

Department ID-> Department Name (Non Prime attribute determine an other non prime attribute. Transitive dependency violation. Not in 3 NF)

FD3:

House ID -> House Name (Non Prime attribute determine an other non prime attribute. Transitive dependency violation. Not in 3 NF)

The final 3NF Relations are the following:

TeamMember ID, Department ID, House ID, TeamName, TeamMemberName, Section, Batch

DepartmentID, Department Name

House ID, House Name

**Q2:**

