C1- S7-PRACTICE-NORMALISATION

EXERCISE 1

STUDENT					
STUDENT_ID	**FIRST NAME**	**LAST NAME**	**AGE**	**CLUB NAME**	**CLUB PRESIDENT**
45	LYHUOY	IN	18	Cooking club	RONAN
65	CHANNARY	PHA	19	Paint club	KUNTHY
42	KUNTHY	SEN	21	Birthday club	SOM
78	NARATH	HI	17	Paint club	KUNTHY

Q1 Does this table respect the **FIRST** **normal form?**

HOW TO CHECK?

- **Rule 1** each column of the table must be single values, which means it should not contain multiple value
- **Rule 2** A column should contain values of the same type
- **Rule 3** each column/attribute in a table should have a unique name
- **Rule 4** the order in which you store the data does not matter

  - **If NO,** correct the tables to have the **FIRST normal form**
  - **Yes**

Q2 Does this table respect the **SECOND** **normal form?**

HOW TO CHECK?

- Check if the primary key is a composite key or not
- If the primary key is not a composite key, than it respects 2NF
- If the primary key is a composite key:
- Look at the other attributes: FIRST_NAME, LAST_NAME, AGE, CLUB_ID CLUB: do they ALL depends on this primary key?
- If NOT: the second normal form is not respected

- **If NO,** correct the tables to have the **SECOND normal form**

STUDENT				
STUDENT_ID	**FIRST NAME**	**LAST NAME**	**AGE**	**CLUB_ID**
45	LYHUOY	IN	18	1
65	CHANNARY	PHA	19	2
42	KUNTHY	SEN	21	3
78	NARATH	HI	17	2

CLUB		
CLUB_ID	**CLUB NAME**	**CLUB PRESIDENT**
1	Cooking club	RONAN
2	Paint club	KUNTHY
3	Birthday club	SOM

Q3 Does this table respect the **THIRD normal form?**

HOW TO CHECK?

- Identify the primary key of the table (here, it is STUDENT_ID)
- Look at the other attributes: FIRST_NAME, LAST_NAME, AGE, CLUB_ID, CLUB: does one attribute depends of another attribute that is not the primary key (*it means that if you change the data of a non key attribute, it may change the data of another attribute)*
- If YES, the 3NF is not respected

- **If NO,** correct the tables to have the **THIRD normal form**

STUDENT				
STUDENT_ID	**FIRST NAME**	**LAST NAME**	**AGE**	**CLUB_ID**
45	LYHUOY	IN	18	1
65	CHANNARY	PHA	19	2
42	KUNTHY	SEN	21	3
78	NARATH	HI	17	2

CLUB		
CLUB_ID	**CLUB NAME**	**CLUB PRESIDENT**
1	Cooking club	RONAN
2	Paint club	KUNTHY
3	Birthday club	SOM

EXERCISE 2

STUDENT		
STUDENT_ID	**NAME**	**CLUB ID**
45	LYHUOY	01, 03
65	CHANNARY	01
145	KUNTHY	01, 02, 03

CLUB	
CLUB_ID	**NAME**
01	Cooking club
02	Paint club
03	Birthday club

Q1 Look at the tables: do they respect the **FIRST normal form?**

- **Rule 1** each column of the table must be single values, which means it should not contain multiple value
- **Rule 2** A column should contain values of the same type
- **Rule 3** each column/attribute in a table should have a unique name
- **Rule 4** the order in which you store the data does not matter

  - **If NO,** correct the tables to have the **FIRST normal form**

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STUDENT		
STUDENT_ID	**NAME**	**CLUB ID**
45	LYHUOY	01
45	LYHUOY	03
65	CHANNARY	01
145	KUNTHY	01
145	KUNTHY	02
145	KUNTHY	03

CLUB	
CLUB_ID	**NAME**
01	Cooking club
02	Paint club
03	Birthday club

EXERCISE 3

GRADE				
STUDENT_ID	**LAST_NAME**	**COURSE_ID**	**TEACHER_NAME**	**GRADE**
1	LYHUOY	3	Rady	45
2	CHANNARY	2	Ronan	10
3	KUNTHY	1	Clement	20
4	LYHOR	1	Clement	55

Q1 Look at the tables: do they respect the **FIRST normal form?**

☒ If NO, correct the tables to have the FIRST normal form

☒ YES

Q2 Look at the tables: do they respect the **SECOND normal form?**

HOW TO CHECK?

- Check if the primary key is a composite key or not
- If the primary key is not a composite key, then it respects 2NF
- If the primary key is a composite key:
- Look at the other attributes: do they ALL depends on the two columns of the primary key?
- If NOT: the second normal form is not respected

- **If NO,** correct the tables to have the **SECOND normal form**

GRADE			
STUDENT_ID	**LAST_NAME**	**COURSE_ID**	**GRADE**
1	LYHUOY	3	45
2	CHANNARY	2	10
3	KUNTHY	1	20
4	LYHOR	1	55

COURSE	
COURSE_ID	**TEACHER_NAME**
3	Rady
2	Ronan
1	Clement