# C1- S7-PRACTICE

# EXERCICE 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**

YES: the primary key is student id, so it is not a composite key. So the 2NF is respected

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 **SECOND normal form**

NO: the primary key is student id. If you change the club name, the club president changes also. So club name and club president should be in a different table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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\_ID** | **CLUB NAME** | **CLUB PRESIDENT** |
| 1 | Cooking club | RONAN |
| 2 | Paint club | KUNTHY |
| 3 | Birthday club | SOM |

# EXERCICE 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**

NO, no single value on club id

|  |  |
| --- | --- |
| **STUDENT\_PER\_CLUB** | |
| **STUDENT\_ID** | **CLUB ID** |
| 45 | 01 |
| 45 | 03 |
| 65 | 01 |
| 145 | 01 |
| 145 | 02 |
| 145 | 03 |

# EXERCICE 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **GRADE** | | | | |
| **STUDENT\_ID** | **LAST\_NAME** | **TEACHER\_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**

NO, the primary key is a composite key made of STUDENT\_ID and TEACHER\_ID.

LAST\_NAME only depends of STUDENT\_ID but not of TEACHER\_ID so it does not respect the 2NF. You need to put the LAST\_NAME in the Student’s table

TEACHER\_NAME only depends of TEACHER\_ID but not of STUDENT\_ID, so it does not respect the 2NF. You need to put TEACHER\_NAME in the TEACHER’s table

|  |  |  |
| --- | --- | --- |
| **GRADE** | | |
| **STUDENT\_ID** | **TEACHER\_ID** | **GRADE** |
| 1 | 3 | 45 |
| 2 | 2 | 10 |
| 3 | 1 | 20 |
| 4 | 1 | 55 |

|  |  |
| --- | --- |
| **STUDENT** | |
| **STUDENT\_ID** | **LAST\_NAME** |
| 1 | LYHUOY |
| 2 | CHANNARY |
| 3 | KUNTHY |
| 4 | LYHOR |

|  |  |
| --- | --- |
| **TEACHER** | |
| **TEACHER\_ID** | **TEACHER\_NAME** |
| 1 | CLEMENT |
| 2 | RONAN |
| 3 | RADY |