**Summary Normalization Lesson**

1. Normalization is the process of reducing data redundancy in a table and improving data integrity.
2. The benefit of using Normalization are:

* Decrement redundancy data
* We can minimize null values by using normalization.
* Minimize or avoid data modification problems
* The database structure is clearer and easier to understand.

1. Problems of database without normalization are:

* Insert Anomaly: This happens when we cannot insert data into the table without another
* Update anomaly: This is due to data inconsistency caused by data redundancy and data update.
* Delete exception: Occurs when some attributes are lost due to the deletion of other attributes.

1. Basic normal form :

* First normal form rules:
  + Each attribute of table must have only one value.
  + One attribute have the same data type.
  + Each attribute in a table should have unique name
  + The order in the table is not the problems.

Example: table that follow First normal rules:

|  |  |  |
| --- | --- | --- |
| STUDENT | | |
| STUDENT ID | STUDENT NAME | COURSE ID |
| 1 | Senghak chhun | D-1 |
| 2 | Roth kh | D-2 |

* Second normal form rules:
  + The table should follow rules of first normal form.
  + None attributes.

Example: table that follow second rules

|  |  |  |
| --- | --- | --- |
| STUDENT | | |
| STUDENT ID | STUDENT NAME | COURSE ID |
| 1 | Senghak chhun | C-1 |
| 2 | Roth kh | C-2 |
| course | | |
| COURSE ID | COURSE NAME | DURATION |
| C-1 | Database | 30 Hour |
| C-2 | leadership | 40 hour |

* Third normal form rules:
  + The table should follow rules of second normal form.
  + Table no transitive dependencies.

Example: table follow third normal rules:

|  |  |  |
| --- | --- | --- |
| course | | |
| COURSE ID | COURSE NAME | DURATION |
| C-1 | Database | 30 Hour |
| C-2 | leadership | 40 hour |

|  |  |  |
| --- | --- | --- |
| SCORE | | |
| STUDENT ID | COURSE ID | SCORE |
| 1 | C-1 | 80 |
| 2 | C-2 | 30 |

|  |  |  |
| --- | --- | --- |
| STUDENT | | |
| STUDENT ID | STUDENT NAME | COURSE ID |
| 1 | Senghak chhun | C-1 |
| 2 | Roth kh | C-2 |