**Practice Exercise 2**

Complete the following:

1. Duplicate the un-normalized tabular format (flat spreadsheet-like table) from the student report below:
2. Convert to 1NF:
   1. Each cell contains a single value
   2. Identify the primary key
3. Convert to 2NF:
   1. Identify the partial dependencies
   2. Convert tables to 2NF (table form and relational schema) by eliminating partial dependencies
4. Convert to 3NF:
   1. Identify the transitive dependencies
   2. Convert tables to 3NF (table form and relational schema) by eliminating transitive dependencies
5. Create an ER diagram from the final normalized database.

**Student Report (un-normalized)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Report** | | | | | | | |
| **Student id** | **Student Name** | **Credits** | **Advisor id** | **Advisor Name** | **Course id** | **Course Desc** | **Grade** |
| 12345 | Jane Smith | 12 | 654 | Shirley Jones | CIS 101  CIS 102  CIS 110 | Logic  XHTML  Visual Basic | A  B  A |
| 98765 | Thomas Last | 9 | 745 | Terry Evans | BUS 101  ENG 101  ENG 102 | Business I  English I  English II | B  C  C |
| 56789 | Robert Sim | 12 | 654 | Shirley Jones | ACC 101  ACC 102  ENG 101  ENG 102 | Accounting I  Accounting II  English I  English II | B  A  A  A |

**Tabular representation of the report format**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| student\_id | student\_name | credits | advisor\_id | advisor\_name | course\_id | course\_desc | grade |
| 12345 | Jane Smith | 12 | 654 | Shirley Jones | CIS 101  CIS 102  CIS 110 | Logic  XHTML  Visual Basic | A  B  A |
| 98765 | Thomas Last | 9 | 745 | Terry Evans | BUS 101  ENG 101  ENG 102 | Business I  English I  English II | B  C  C |
| 56789 | Robert Sim | 12 | 654 | Shirley Jones | ACC 101  ACC 102  ENG 101  ENG 102 | Accounting I  Accounting II  English I  English II | B  A  A  A |

STUDENT

STUDENT (student\_id, student\_name, credits, advisor\_id,

advisor\_name, course\_id, course\_desc, grade)