**Normalization**

**Initial Table:-**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Student Id | First Name | Last Name | Sec | Dep\_id | Dep\_ Name | Dep\_ Manager | Year | Phone | State | Grade | Sub\_id | Emp\_id | First\_ Name | Last\_ Name | Phone | Job | State |
| 1 | Ahmed | Ali | 11 | 50560 | Global |  | 1 | 01036521478 | Tanta |  | Ara702 | 9686768 | Ahmed | Hamad | 0109869056 | Doctor | Shebein |
| 1 | Ahmed | Ali | 11 | 50560 | Global |  | 1 | 01036521478 | Tanta |  | Ara704 | 7800245 | Ahmed | Samy | 01148745962 | Demonstrator | Shebein |
| 2 | Mohamed | Swedan | 5 | 50566 | IT | Ahmed Hamad | 3 | 01278459621 | Alex | 75 | Ara746 | 5857565 | Mohamed | Mohy | 0126574849 | manager | Alex |
| 3 | Mahmoud | Eltayeb | 5 | 50565 | IS | Hatem Mohamed | 3 | 01009685784 | Shebein | 55 | Ara713 | 8575869 | Mahmoud | Gamal | 0117598475 | Assistant | Shebein |
| 4 | Mohamed | Magdy | 14 | 50567 | CS | Ashraf Elsisi | 3 | 01147852001 | Cairo | 72 | Ara741 | 4084746 | Mohamed | Fadi | 0164849587 | Doctor | Shebein |
| 5 | Heba | Salah | 3 | 50568 | OR | Osama | 4 | 01289654031 | Tanta | 61 | Ara775 | 2325364 | Ayman | Salaeh | 0174848409 | Assistant | Shebein |
| 6 | Randa | gamal | 9 | 50560 | Global |  | 2 | 01000957416 | Shebein | 63 | Ara764 | 7464756 | Sara | Gamal | 0190453726 | Manager | Tala |
| 7 | Waleed | Tawfek | 2 | 50565 | IS | Hatem Mohamed | 4 | 01225471026 | Alex | 69 | Ara712 | 7464546 | Waleed | Khaled | 0186449484 | Doctor | Shebein |
| 8 | Mahmoud | Rezk | 6 | 50566 | IT | Ahmed Hamad | 4 | 01008579451 | Shebein | 86 | Ara745 | 7464871 | kamal | Khaled | 01000321457 | Assistant | Cairo |
| 9 | Hani | Mohamed | 3 | 50567 | CS | Ashraf Elsisi | 3 | 01009712003 | Tanta | 92 | Ara704 | 7464889 | Mohamed | Ali | 01289654031 | Assistant | Cairo |
| 10 | Karim | ELgendy | 9 | 50560 | Global |  | 2 | 01118756924 | Tala | 72 | Ara740 | 7464890 | Adel | Gaber | 01278459621 | Doctor | Cairo |
| 11 | mohanad | emara | 8 | 50567 | CS | Ashraf Elsisi | 4 | 01009524003 | Tanta | 89 | Ara740 | 7464800 | Arabi | Ahmed | 01270001621 | Dean | Tanta |
| 12 | mohamed | Adel | 1 | 50560 | Global |  | 1 | 01118787924 | Alex | 91 | Ara702 | 8740256 | Aya | Ali | 01226547814 | Assistant | Shebein |
| 13 | Aya | Ahmed | 3 | 50566 | IT | Ahmed Hamad | 3 | 01147845021 | Cairo | 88 | Ara745 | 9021304 | Ahmed | Mohamed | 01223650124 | Doctor | Tala |
| 14 | Gaber | Mahmoud | 5 | 50566 | IT | Ahmed Hamad | 4 | 01147005012 | Tanta | 57 | Ara745 | 9021317 | karim | Hani | 01112569031 | Assistant | Tanta |
| 15 | Hani | Mohamed | 8 | 50560 | Global |  | 2 | 01000258791 | Cairo | 76 | Ara764 | 7845960 | hani | Karim | 01002365478 | Assistant | Shebein |

**Tables after 1NF:-**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Student Id | First Name | Last Name | Sec | Dep\_id | Dep\_ Name | Dep\_ Manager | Year | Phone | State |
| 1 | Ahmed | Ali | 11 | 50560 | Global |  | 1 | 01036521478 | Tanta |
| 2 | Mohamed | Swedan | 5 | 50566 | IT | Ahmed Hamad | 3 | 01278459621 | Alex |
| 3 | Mahmoud | Eltayeb | 5 | 50565 | IS | Hatem Mohamed | 3 | 01009685784 | Shebein |
| 4 | Mohamed | Magdy | 14 | 50567 | CS | Ashraf Elsisi | 3 | 01147852001 | Cairo |
| 5 | Heba | Salah | 3 | 50568 | OR | Osama | 4 | 01289654031 | Tanta |
| 6 | Randa | Gamal | 9 | 50560 | Global |  | 2 | 01000957416 | Shebein |
| 7 | Waleed | Tawfek | 2 | 50565 | IS | Hatem Mohamed | 4 | 01225471026 | Alex |
| 8 | Mahmoud | Rezk | 6 | 50566 | IT | Ahmed Hamad | 4 | 01008579451 | Shebein |
| 9 | Hani | Mohamed | 3 | 50567 | CS | Ashraf Elsisi | 3 | 01009712003 | Tanta |
| 10 | Karim | Elgendy | 9 | 50560 | Global |  | 2 | 01118756924 | Tala |
| 11 | Mohanad | Emara | 8 | 50567 | CS | Ashraf Elsisi | 4 | 01009524003 | Tanta |
| 12 | Mohamed | Adel | 1 | 50560 | Global |  | 1 | 01118787924 | Alex |
| 13 | Aya | Ahmed | 3 | 50566 | IT | Ahmed Hamad | 3 | 01147845021 | Cairo |
| 14 | Gaber | Mahmoud | 5 | 50566 | IT | Ahmed Hamad | 4 | 01147005012 | Tanta |
| 15 | Hani | Mohamed | 8 | 50560 | Global |  | 2 | 01000258791 | Cairo |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dep\_id | Student Id | Year | Grade | Sub\_id | Emp\_id | emp  First\_ Name | emp  Last\_ Name | Emp  Phone | emp  Job | Emp State |
| 50560 | 1 | 1 | 72 | Ara702 | 9686768 | Ahmed | Hamad | 0109869056 | Doctor | Shebein |
| 50560 | 1 | 1 | 63 | Ara704 | 7800245 | Ahmed | Samy | 01148745962 | Demonstrator | Shebein |
| 50566 | 2 | 3 | 75 | Ara746 | 5857565 | Mohamed | Mohy | 0126574849 | manager | Alex |
| 50565 | 3 | 3 | 55 | Ara713 | 8575869 | Mahmoud | Gamal | 0117598475 | Assistant | Shebein |
| 50567 | 4 | 3 | 72 | Ara741 | 4084746 | Mohamed | Fadi | 0164849587 | Doctor | Shebein |
| 50568 | 5 | 4 | 61 | Ara775 | 2325364 | Ayman | Salaeh | 0174848409 | Assistant | Shebein |
| 50560 | 6 | 2 | 63 | Ara764 | 7464756 | Sara | Gamal | 0190453726 | Manager | Tala |
| 50565 | 7 | 4 | 69 | Ara712 | 7464546 | Waleed | Khaled | 0186449484 | Doctor | Shebein |
| 50566 | 8 | 4 | 86 | Ara745 | 7464871 | kamal | Khaled | 01000321457 | Assistant | Cairo |
| 50567 | 9 | 3 | 92 | Ara704 | 7464889 | Mohamed | Ali | 01289654031 | Assistant | Cairo |
| 50560 | 10 | 2 | 72 | Ara740 | 7464890 | Adel | Gaber | 01278459621 | Doctor | Cairo |
| 50567 | 11 | 4 | 89 | Ara740 | 7464800 | Arabi | Ahmed | 01270001621 | Dean | Tanta |
| 50560 | 12 | 1 | 91 | Ara702 | 8740256 | Aya | Ali | 01226547814 | Assistant | Shebein |
| 50566 | 13 | 3 | 88 | Ara745 | 9021304 | Ahmed | Mohamed | 01223650124 | Doctor | Tala |
| 50566 | 14 | 4 | 57 | Ara745 | 9021317 | Karim | Hani | 01112569031 | Assistant | Tanta |
| 50560 | 15 | 2 | 76 | Ara764 | 7845960 | Hani | Karim | 01002365478 | Assistant | Shebein |

**Tables after 2NF:-**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Student Id** | First Name | Last Name | Sec | Year | Phone | State |
| 1 | Ahmed | Ali | 11 | 1 | 01036521478 | Tanta |
| 2 | Mohamed | Swedan | 5 | 3 | 01278459621 | Alex |
| 3 | Mahmoud | Eltayeb | 5 | 3 | 01009685784 | Shebein |
| 4 | Mohamed | Magdy | 14 | 3 | 01147852001 | Cairo |
| 5 | Heba | Salah | 3 | 4 | 01289654031 | Tanta |
| 6 | Randa | Gamal | 9 | 2 | 01000957416 | Shebein |
| 7 | Waleed | Tawfek | 2 | 4 | 01225471026 | Alex |
| 8 | Mahmoud | Rezk | 6 | 4 | 01008579451 | Shebein |
| 9 | Hani | Mohamed | 3 | 3 | 01009712003 | Tanta |
| 10 | Karim | ELgendy | 9 | 2 | 01118756924 | Tala |
| 11 | mohanad | Emara | 8 | 4 | 01009524003 | Tanta |
| 12 | mohamed | Adel | 1 | 1 | 01118787924 | Alex |
| 13 | Aya | Ahmed | 3 | 3 | 01147845021 | Cairo |
| 14 | Gaber | Mahmoud | 5 | 4 | 01147005012 | Tanta |
| 15 | Hani | Mohamed | 8 | 2 | 01000258791 | Cairo |

|  |  |  |
| --- | --- | --- |
| **Dep\_id** | Dep\_ Name | Dep\_ Manager |
| 50560 | Global |  |
| 50566 | IT | Ahmed Hamad |
| 50565 | IS | Hatem Mohamed |
| 50567 | CS | Ashraf Elsisi |
| 50568 | OR | Osama |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Dep\_id | Student Id | Grade | Sub\_id | Emp\_id | Year |
| 50560 | 1 | 72 | Ara702 | 9686768 | 1 |
| 50560 | 1 | 63 | Ara704 | 7800245 | 1 |
| 50566 | 2 | 75 | Ara746 | 5857565 | 3 |
| 50565 | 3 | 55 | Ara713 | 8575869 | 3 |
| 50567 | 4 | 72 | Ara741 | 4084746 | 3 |
| 50568 | 5 | 61 | Ara775 | 2325364 | 4 |
| 50560 | 6 | 63 | Ara764 | 7464756 | 2 |
| 50565 | 7 | 69 | Ara712 | 7464546 | 4 |
| 50566 | 8 | 86 | Ara745 | 7464871 | 4 |
| 50567 | 9 | 92 | Ara704 | 7464889 | 3 |
| 50560 | 10 | 72 | Ara740 | 7464890 | 2 |
| 50567 | 11 | 89 | Ara740 | 7464800 | 4 |
| 50560 | 12 | 91 | Ara702 | 8740256 | 1 |
| 50566 | 13 | 88 | Ara745 | 9021304 | 3 |
| 50566 | 14 | 57 | Ara745 | 9021317 | 4 |
| 50560 | 15 | 76 | Ara764 | 7845960 | 2 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Emp\_id | emp  First\_ Name | Emp  Last\_ Name | Emp  Phone | Emp  Job | Emp State |
| 9686768 | Ahmed | Hamad | 0109869056 | Doctor | Shebein |
| 7800245 | Ahmed | Samy | 01148745962 | Demonstrator | Shebein |
| 5857565 | Mohamed | Mohy | 0126574849 | Manager | Alex |
| 8575869 | Mahmoud | Gamal | 0117598475 | Assistant | Shebein |
| 0484746 | Mohamed | Fadi | 0164849587 | Doctor | Shebein |
| 2325364 | Ayman | Salaeh | 0174848409 | Assistant | Shebein |
| 7464756 | Sara | Gamal | 0190453726 | Manager | Tala |
| 7464546 | Waleed | Khaled | 0186449484 | Doctor | Shebein |
| 7464871 | kamal | Khaled | 01000321457 | Assistant | Cairo |
| 7464889 | Mohamed | Ali | 01289654031 | Assistant | Cairo |
| 7464890 | Adel | Gab er | 01278459621 | Doctor | Cairo |
| 7464800 | Arabi | Ahmed | 01270001621 | Dean | Tanta |
| 8740256 | Aya | Ali | 01226547814 | Assistant | Shebein |
| 9021304 | Ahmed | Mohamed | 01223650124 | Doctor | Tala |
| 9021317 | Karim | Hani | 01112569031 | Assistant | Tanta |
| 7845960 | Hani | Karim | 01002365478 | Assistant | Shebein |

**Tables after 3NF:-**

**Student table**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Student Id** | First Name | Last Name | Sec | Year | Phone | State |
| 1 | Ahmed | Ali | 11 | 1 | 01036521478 | Tanta |
| 2 | Mohamed | Swedan | 5 | 3 | 01278459621 | Alex |
| 3 | Mahmoud | Eltayeb | 5 | 3 | 01009685784 | Shebein |
| 4 | Mohamed | Magdy | 14 | 3 | 01147852001 | Cairo |
| 5 | Heba | Salah | 3 | 4 | 01289654031 | Tanta |
| 6 | Randa | Gamal | 9 | 2 | 01000957416 | Shebein |
| 8 | Mahmoud | Rezk | 6 | 4 | 01008579451 | Shebein |
| 9 | Hani | Mohamed | 3 | 3 | 01009712003 | Tanta |
| 10 | Karim | ELgendy | 9 | 2 | 01118756924 | Tala |
| 11 | Mohanad | Emara | 8 | 4 | 01009524003 | Tanta |
| 12 | Mohamed | Adel | 1 | 1 | 01118787924 | Alex |
| 13 | Aya | Ahmed | 3 | 3 | 01147845021 | Cairo |
| 14 | Gaber | Mahmoud | 5 | 4 | 01147005012 | Tanta |
| 15 | Hani | Mohamed | 8 | 2 | 01000258791 | Cairo |

**Department table**

|  |  |  |
| --- | --- | --- |
| **Dep\_id** | Dep\_ Name | Dep\_ Manager |
| 50560 | Global |  |
| 50566 | IT | Ahmed Hamad |
| 50565 | IS | Hatem Mohamed |
| 50567 | CS | Ashraf Elsisi |
| 50568 | OR | Osama |

**Teaching\_staff table**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Emp\_id | Emp  First\_ Name | Emp  Last\_ Name | Emp  Phone | Emp  Job | Emp State |
| 9686768 | Ahmed | Hamad | 0109869056 | Doctor | Shebein |
| 7800245 | Ahmed | Samy | 01148745962 | Demonstrator | Shebein |
| 5857565 | Mohamed | Mohy | 0126574849 | Manager | Alex |
| 8575869 | Mahmoud | Gamal | 0117598475 | Assistant | Shebein |
| 4084746 | Mohamed | Fadi | 0164849587 | Doctor | Shebein |
| 2325364 | Ayman | Salaeh | 0174848409 | Assistant | Shebein |
| 7464756 | Sara | Gamal | 0190453726 | Manager | Tala |
| 7464546 | Waleed | Khaled | 0186449484 | Doctor | Shebein |
| 7464871 | kamal | Khaled | 01000321457 | Assistant | Cairo |
| 7464889 | Mohamed | Ali | 01289654031 | Assistant | Cairo |
| 7464890 | Adel | Gaber | 01278459621 | Doctor | Cairo |
| 7464800 | Arabi | Ahmed | 01270001621 | Dean | Tanta |
| 8740256 | Aya | Ali | 01226547814 | Assistant | Shebein |
| 9021304 | Ahmed | Mohamed | 01223650124 | Doctor | Tala |
| 9021317 | Karim | Hani | 01112569031 | Assistant | Tanta |
| 7845960 | Hani | Karim | 01002365478 | Assistant | Shebein |

**Subject table**

|  |  |  |  |
| --- | --- | --- | --- |
| Year | Dep\_id | Sub\_id | Emp\_id |
| 1 | 50560 | Ara702 | 9686768 |
| 1 | 50560 | Ara704 | 7800245 |
| 3 | 50566 | Ara746 | 5857565 |
| 3 | 50565 | Ara713 | 8575869 |
| 3 | 50567 | Ara741 | 4084746 |
| 4 | 50568 | Ara775 | 2325364 |
| 2 | 50560 | Ara764 | 7464756 |
| 4 | 50565 | Ara712 | 7464546 |
| 4 | 50566 | Ara745 | 7464871 |
| 3 | 50567 | Ara704 | 7464889 |
| 2 | 50560 | Ara740 | 7464890 |
| 4 | 50567 | Ara740 | 7464800 |
| 1 | 50560 | Ara702 | 8740256 |
| 3 | 50566 | Ara745 | 9021304 |
| 4 | 50566 | Ara745 | 9021317 |
| 2 | 50560 | Ara764 | 7845960 |

**Grade table**

|  |  |  |
| --- | --- | --- |
| Student Id | Grade | Sub\_id |
| 1 | 72 | Ara702 |
| 1 | 63 | Ara704 |
| 2 | 75 | Ara746 |
| 3 | 55 | Ara713 |
| 4 | 72 | Ara741 |
| 5 | 61 | Ara775 |
| 6 | 63 | Ara764 |
| 7 | 69 | Ara712 |
| 8 | 86 | Ara745 |
| 9 | 92 | Ara704 |
| 10 | 72 | Ara740 |
| 11 | 89 | Ara740 |
| 12 | 91 | Ara702 |
| 13 | 88 | Ara745 |
| 14 | 57 | Ara745 |
| 15 | 76 | Ara764 |