Шипигузов Георгий

Часть 1

Исходная таблица:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ID | Employee | Supervisor | travel\_required | Department | Project | Position |
| 1 | MICHAEL J. ANDERSON | NICOLE GRAY | yes | IT | Marketing optimization, demand forecasting | Senior Data Analyst |
| 2 | SCOTT G. ADAMS | CLARKE HAMBLEY | no | Tech | Automation of processes | Engineer |
| 3 | JAMES B. BARNS | MICHAEL J. ANDERSON | no | IT | Demand forecasting | Data Analyst |
| 4 | PAUL R. BROWN | MARGARET C. LEPAGE | no | Finance | Budget planning | Manager |
| 5 | JESSICA R. CURRIER | CATHERINE LEWIS | yes | HR | Hiring employees | Business partners |
| 6 | KRIS J. EIMICKE | MARGARET C. LEPAGE | yes | Finance | Budget planning | Account manager |
| 7 | STEVEN E. COPE | CATHERINE LEWIS | no | IT | Infrastructure development | Data engineer |
| 8 | REBECCA GREENFIELD | CLARKE HAMBLEY | yes | Tech | Automation of processes | Engineer |
| 9 | ANDREA L FRAVERT | MICHAEL J. ANDERSON | no | IT | Data visualization, Data analysis | Data Analyst |
| 10 | MATTHEW J. FOSTER | MICHAEL J. ANDERSON | no | IT | Sales optimization | Project manager |

Столбец “Project” содержит список, таблица не находится в 1НФ

1. **Приведем таблицу к 1НФ**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ID | Employee | Supervisor | travel\_required | Department | Project | Position |
| 1 | MICHAEL J. ANDERSON | NICOLE GRAY | yes | IT | Marketing optimization | Senior Data Analyst |
| 2 | MICHAEL J. ANDERSON | NICOLE GRAY | yes | IT | Demand forecasting | Senior Data Analyst |
| 3 | SCOTT G. ADAMS | CLARKE HAMBLEY | no | Tech | Automation of processes | Engineer |
| 4 | JAMES B. BARNS | MICHAEL J. ANDERSON | no | IT | Demand forecasting | Data Analyst |
| 5 | PAUL R. BROWN | MARGARET C. LEPAGE | no | Finance | Budget planning | Manager |
| 6 | JESSICA R. CURRIER | CATHERINE LEWIS | yes | HR | Hiring employees | Business partners |
| 7 | KRIS J. EIMICKE | MARGARET C. LEPAGE | yes | Finance | Budget planning | Account manager |
| 8 | STEVEN E. COPE | CATHERINE LEWIS | no | IT | Infrastructure development | Data engineer |
| 9 | REBECCA GREENFIELD | CLARKE HAMBLEY | yes | Tech | Automation of processes | Engineer |
| 10 | ANDREA L FRAVERT | MICHAEL J. ANDERSON | no | IT | Data visualization | Data Analyst |
| 11 | ANDREA L FRAVERT | MICHAEL J. ANDERSON | no | IT | Data analysis | Data Analyst |
| 12 | MATTHEW J. FOSTER | MICHAEL J. ANDERSON | no | IT | Sales optimization | Project manager |

Все значения в таблице содержат скалярные значения, таблица приведена к 1НФ

1. **Приведем таблицу к 2НФ**

Таблица не находится в 2НФ так как значения столбца “Department” зависят от столбца “Project”, но не от “Employee”

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Employee | Supervisor | travel\_required | Project | Position |
| 1 | MICHAEL J. ANDERSON | NICOLE GRAY | yes | Marketing optimization | Senior Data Analyst |
| 2 | MICHAEL J. ANDERSON | NICOLE GRAY | yes | Demand forecasting | Senior Data Analyst |
| 3 | SCOTT G. ADAMS | CLARKE HAMBLEY | no | Automation of processes | Engineer |
| 4 | JAMES B. BARNS | MICHAEL J. ANDERSON | no | Demand forecasting | Data Analyst |
| 5 | PAUL R. BROWN | MARGARET C. LEPAGE | no | Budget planning | Manager |
| 6 | JESSICA R. CURRIER | CATHERINE LEWIS | yes | Hiring employees | Business partners |
| 7 | KRIS J. EIMICKE | MARGARET C. LEPAGE | yes | Budget planning | Account manager |
| 8 | STEVEN E. COPE | CATHERINE LEWIS | no | Infrastructure development | Data engineer |
| 9 | REBECCA GREENFIELD | CLARKE HAMBLEY | yes | Automation of processes | Engineer |
| 10 | ANDREA L FRAVERT | MICHAEL J. ANDERSON | no | Data visualization | Data Analyst |
| 11 | ANDREA L FRAVERT | MICHAEL J. ANDERSON | no | Data analysis | Data Analyst |
| 12 | MATTHEW J. FOSTER | MICHAEL J. ANDERSON | no | Sales optimization | Project manager |

Добавим новую таблицу:

|  |  |  |
| --- | --- | --- |
| ID | Project | Department |
| 1 | Marketing optimization | IT |
| 2 | Demand forecasting | IT |
| 3 | Automation of processes | Tech |
| 4 | Budget planning | Finance |
| 5 | Hiring employees | HR |
| 6 | Infrastructure development | IT |
| 7 | Data visualization | IT |
| 8 | Data analysis | IT |
| 9 | Sales optimization | IT |

Таблицы находятся в 2НФ, так как они находятся в 1НФ и все столбцы, не являющиеся ключом, зависят от первичного ключа.

1. **Приведем таблицы к 3НФ**

Таблицы находятся в 3НФ т.к. они находятся в 2НФ и значения всех столбцов зависят лишь от первичного ключа.