**Relational Database Project -** *Design Phase*

***Polaris Recruitment***

*Polaris Recruitment Employment Agency*

**Background of Organisation:**

The aim of this project is to design a database for a system that is currently manual or outdated. The system I am designing is for Polaris Recruitment.

Established in 1998, Polaris Recruitment are an employment agency that provide a link between employers and graduates/experienced potential employees by advertising the most up to date jobs currently on offer and local skills/training courses designed to improve employability.

With offices located in Cork city, Mallow and Mitchelstown, Polaris employ 18 full and part time staff between their three offices (Cork City office: 9, Mallow office: 4, Mitchelstown office: 5).

**Normalisation:**

**1 - Normalisation**

Normalisation is a process of obtaining stable groupings of attributes within relations/tables and is a technique designed to ensure that the data structures used in a system are efficient and maintain integrity i.e. to prevent anomalies and inconsistent data in the database.

A database is normalised by putting it into first, second and third normal form.

**List of Attributes**

CustomerID, CustName, CustDOB, CustPPSN, CustAddress, CustContactNo, EnglishFluency, CustEmpSector, ExpectedSalary, ExpertField, DateLastEmployed, JobID, JobSector, JobTitle, JobSalary, MinQualification, MinExperience, DateAdvertised, ContractType, ContractLength, StaffID, StaffName, StaffDOB, StaffPPSN, StaffAddress, StaffContactNo, StaffSalary, YearsEmployed, OfficeID, OfficeAddress, OfficeContactNo, OfficeEmail, OfficeEmpNo, CourseID, CourseTitle, CourseDirector, CourseDuration, CourseCapacity, CourseCert, CourseSponsor, CourseFee, EmpID, EmpSect, EmpName, EmpLocation, EmpContactNo, EmpContact, EmpEmployeeNo

**Rules for 1NF**

Attributes of the relation must be atomic so that no subsets exist within an attribute or relation.

Attributes accept only single data items and the attributes do not cause data element repetition which could be eliminated by dividing the relation into two.

**1NF**

**Customers** (CustomerID, CustName, CustDOB, CustPPSN, CustAddress, CustContactNo, EnglishFluency, CustEmpSector, ExpectedSalary, ExpertField, DateLastEmployed, JobID, JobSector, JobTitle, JobSalary, MinQualification, MinExperience, DateAdvertised, ContractType, ContractLength, EmpID, EmpSect, EmpName, EmpLocation, EmpContactNo, EmpContact, EmpEmployeeNo, OfficeID, OfficeAddress, OfficeContactNo, OfficeEmail, OfficeEmpNo)

**Staff** (StaffID, StaffName, StaffDOB, StaffPPSN, StaffAddress, StaffContactNo, StaffSalary, YearsEmployed, CourseID, CourseTitle, CourseDirector, CourseDuration, CourseCapacity, CourseCert, CourseSponsor, CourseFee, OfficeID)

**Rules for 2NF**

Each attribute of the relation must be entirely dependent upon each and every attribute of the primary key.

Attributes not dependent upon the entire primary key must be extracted to form another relation.

**2NF**

**Customers** (CustomerID, CustName, CustDOB, CustPPSN, CustAddress, CustContactNo, EnglishFluency, CustEmpSector, ExpectedSalary, ExpertField, DateLastEmployed,)

**Customer Jobs** (CustomerID, JobID)

**Local Jobs** (JobID, JobSector, JobTitle, JobSalary, MinQualification, MinExperience, DateAdvertised, ContractType, ContractLength, EmpID, EmpSect, EmpName, EmpLocation, EmpContactNo, EmpContact, EmpEmployeeNo, OfficeID, OfficeAddress, OfficeContactNo, OfficeEmail, OfficeEmpNo)

**Staff** (StaffID, StaffName, StaffDOB, StaffPPSN, StaffAddress, StaffContactNo, StaffSalary, YearsEmployed, CourseID, CourseTitle, CourseDirector, CourseDuration, CourseCapacity, CourseCert, CourseSponsor, CourseFee, OfficeID)

**Rules for 3NF**

No attributes in the relation must be mutually dependent upon each other.

Mutually dependent attributes must be extracted to form another relation.

**3NF**

**Customers** (CustomerID, CustName, CustDOB, CustPPSN, CustAddress, CustContactNo, EnglishFluency, CustEmpSector, ExpectedSalary, ExpertField, DateLastEmployed,)

**Customer Jobs** (CustomerID, JobID)

**Local Jobs** (JobID, JobSector, JobTitle, JobSalary, MinQualification, MinExperience, DateAdvertised, ContractType, ContractLength, EmpID)

**Employers** (EmpID, EmpSect, EmpName, EmpLocation, EmpContactNo, EmpContact, EmpEmployeeNo, OfficeID, OfficeAddress, OfficeContactNo, OfficeEmail, OfficeEmpNo)

**Staff** (StaffID, StaffName, StaffDOB, StaffPPSN, StaffAddress, StaffContactNo, StaffSalary, YearsEmployed, OfficeID)

**Courses** (CourseID, CourseTitle, CourseDirector, CourseDuration, CourseCapacity, CourseCert, CourseSponsor, CourseFee, OfficeID)

**Rules for 4NF**

The relation should not contain multi-valued dependencies i.e. two or more independent multi-valued facts about an entity.

**4NF**

**Customers** (CustomerID, CustName, CustDOB, CustPPSN, CustAddress, CustContactNo, EnglishFluency, CustEmpSector, ExpectedSalary, ExpertField, DateLastEmployed,)

**Customer Jobs** (CustomerID, JobID)

**Local Jobs** (JobID, JobSector, JobTitle, JobSalary, MinQualification, MinExperience, DateAdvertised, ContractType, ContractLength, EmpID)

**Employers** (EmpID, EmpSect, EmpName, EmpLocation, EmpContactNo, EmpContact, EmpEmployeeNo, OfficeID)

**Office** (OfficeID, OfficeAddress, OfficeContactNo, OfficeEmail, OfficeEmpNo)

**Staff** (StaffID, StaffName, StaffDOB, StaffPPSN, StaffAddress, StaffContactNo, StaffSalary, YearsEmployed, OfficeID)

**Courses** (CourseID, CourseTitle, CourseDirector, CourseDuration, CourseCapacity, CourseCert, CourseSponsor, CourseFee, OfficeID)

**Tables List**

**Tables/Entities:**

1. **Customers** – Details of the potential employees/job seekers using the service/agency
2. **Staff** –Detailsof the staffworking at the agency
3. **Employers** – Details of the employers/companies who advertise jobs through the agency
4. **Local Jobs** – Details of thejobs/positions advertised/offered locally
5. **Customer Jobs** – LinksCustomer table to Local Jobs table
6. **Courses** – Details of any skills/training courses taking place locally to improve customers employability
7. **Office** – Details of specificemployment agency office
8. **Customers**

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Description** | **Key** |
| CustomerID | Customer ID | Primary |
| CustName | Customer Name |  |
| CustDOB | Customer Date of Birth |  |
| CustPPSN | Customer PPSN |  |
| CustAddress | Customer Address |  |
| CustContactNo | Customer Contact Number |  |
| EnglishFluency | English Fluency |  |
| CustEmpSector | Employment Sector |  |
| ExpectedSalary | Salary Customer Expects |  |
| ExpertField | Customer’s Field of Expertise |  |
| DateLastEmployed | Date of Last Employment |  |

1. **Staff**

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Description** | **Key** |
| StaffID | Staff ID | Primary |
| StaffName | Staff Name |  |
| StaffDOB | Staff Date of Birth |  |
| StaffPPSN | Staff PPSN |  |
| StaffAddress | Staff Address |  |
| StaffContactNo | Staff Contact Number |  |
| StaffSalary | Staff Salary |  |
| YearsEmployed | Years Staff member is Employed with Polaris |  |
| OfficeID | Office ID | Foreign |

1. **Employers**

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Description** | **Key** |
| EmpID | Employer ID | Primary |
| EmpSect | Employer Sector |  |
| EmpName | Employer Name |  |
| EmpLocation | Employer Location/Address |  |
| EmpContactNo | Employer Contact Number |  |
| EmpContact | Employer Contact Name |  |
| EmpEmployeeNo | Number of Employees in Employer’s Company |  |
| OfficeID | Office ID | Foreign |

1. **Local Jobs**

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Description** | **Key** |
| JobID | Job ID | Primary |
| JobSector | Job Sector |  |
| JobTitle | Job Title |  |
| JobSalary | Job Salary |  |
| MinQualification | Minimum Qualification Required |  |
| MinExperience | Minimum Years’ Experience Required |  |
| DateAdvertised | Date Job was first Advertised |  |
| ContractType | Whether contract is Part Time, Full Time or Contract based |  |
| ContractLength | Contract Length |  |
| EmpID |  |  |

1. **Customer Jobs**

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Description** | **Key** |
| CustomerID | Customer ID | Primary |
| JobID | Job ID | Primary |

1. **Courses**

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Description** | **Key** |
| CourseID | Course ID | Primary |
| CourseTitle | Course Title |  |
| CourseDirector | Course Director |  |
| CourseDuration | Course Duration |  |
| CourseCapacity | Course Capacity |  |
| CourseCert | Certified Course |  |
| CourseSponsor | Course Sponsor |  |
| CourseFee | Course Fee |  |
| OfficeID | Office ID | Foreign |

1. **Office**

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Description** | **Key** |
| OfficeID | Office ID | Primary |
| OfficeAddress | Office Address |  |
| OfficeContactNo | Office Contact Number |  |
| OfficeEmail | Office Email Address |  |
| OfficeEmpNo | Number of Employees in Office |  |

**Entity Entity Matrix**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Entity Name** | **Customers** | **Customer Jobs** | **Local Jobs** | **Employers** | **Office** | **Staff** | **Courses** |
| **Customers** |  | M:1 |  |  |  |  |  |
| **Customer Jobs** | 1:M |  | 1:M |  |  |  |  |
| **Local Jobs** |  | M:1 |  | 1:M |  |  |  |
| **Employers** |  |  | M:1 |  | 1:M |  |  |
| **Office** |  |  |  | M:1 |  | M:1 | M:1 |
| **Staff** |  |  |  |  | 1:M |  |  |
| **Courses** |  |  |  |  | 1:M |  |  |

**Basic Entity-Relationship Diagram**

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**Detailed Entity-Relationship Diagram**

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