**Data Base Management**

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**E-R Diagram:**

[\*] Document the E-R Diagram in a word doc explaining each table and its relationship with other tables in the database. Your document should explain the entire database architecture in a precise manner.

Timeline

Description automatically generated

**Database architecture:**

The database named ‘dbo’ consists on 13 tables, named as following: (mysql> SHOW TABLES;)

[\*] Tables\_in\_dbo:

[1] **course\_data\_external**

[2] **examschedule**

[3] **tblcentremaster**

[4] **tbldesignations**

[5] **tblemployees**

[6] **tblemployeetypes**

[7] **tbllocations**

[8] **tblpayemployeeparamdetails**

[9] **tblpayemployees**

[10] **tblpaymaster**

[11] **tblservicestatus**

[12] **tblservicetypes**

[13] **tblstatemaster**

**Detailed table description:**

[1] **course\_data\_external:** 12 fieldscontaining information related to external course institution participant related data. Among its fields, they can be found:

|  |  |  |
| --- | --- | --- |
| **Field name** | **Data type and Definition** | **Description** |
| **Institution** | varchar(20) DEFAULT NULL | Institution identifier |
| **Course\_Number** | varchar(20) DEFAULT NULL | Course identifier |
| **LaunchDate** | date DEFAULT NULL | Course launch date |
| **CourseTitle** | varchar(50) DEFAULT NULL | Course title |
| **Instructors** | varchar(20) DEFAULT NULL | Designated instructors |
| **Year** | int DEFAULT NULL | Launch year |
| **Participants** | int DEFAULT NULL | Number of participants |
| **Certified** | int DEFAULT NULL | Certification number |
| **TotalCourseHours** | int DEFAULT NULL | Course duration |
| **MedianAge** | int DEFAULT NULL | Median age of participants |
| **Male** | int DEFAULT NULL | Number of males |
| **Female** | int DEFAULT NULL | Number of females |

ENGINE=InnoDB EFAULT CHARSET=utf8mb4 COLLATE=utf8mb4\_0900\_ai\_ci

No Primary Key or Foreign key definition (Relation with the other table(s) not established yet)

[2] **examschedule:** 3 fieldscontaining information related to external course number and initial and final dates. Among its fields, can be found:

|  |  |  |
| --- | --- | --- |
| **Field name** | **Data type and Definition** | **Description** |
| **ClassNo** | int DEFAULT NULL | Class identifier |
| **DateFrom** | datetime DEFAULT NULL | Class starting date |
| **DateTo** | datetime DEFAULT NULL | Class ending date |

ENGINE=InnoDB DEFAULT CHARSET=latin1;

No Primary Key or Foreign key definition (Relation with the other table(s) not established yet)

[3] **tblcentremaster:** 29 fieldscontaining information related to center master related data. Among its fields, they can be found:

|  |  |  |
| --- | --- | --- |
| **Field name** | **Data type and Definition** | **Description** |
| **RefNoteNumber** | char(25) DEFAULT NULL | Note Number |
| **CentreCode** | int NOT NULL | Center identifier |
| **CentreName** | varchar(50) DEFAULT NULL |  |
| **StartDate** | datetime NOT NULL |  |
| **DistrictCode** | smallint DEFAULT NULL |  |
| **SectorCode** | smallint DEFAULT NULL |  |
| **ZoneCode** | smallint NOT NULL |  |
| **CentreCategory** | smallint NOT NULL |  |
| **CentreType** | varchar(50) DEFAULT NULL |  |
| **PFNumber** | varchar(25) DEFAULT NULL |  |
| **StorageCapacity** | int DEFAULT NULL |  |
| **LicenceNumber** | varchar(25) DEFAULT NULL |  |
| **IssueDate** | datetime NOT NULL |  |
| **AddressCode** | smallint DEFAULT NULL |  |
| **AgreementCode** | varchar(15) DEFAULT NULL |  |
| **CompanyCode** | smallint NOT NULL |  |
| **DivisionCode** | tinyint unsigned NOT NULL |  |
| **AreaCode** | tinyint unsigned DEFAULT NULL |  |
| **LeafAvailability** | varchar(10) DEFAULT NULL |  |
| **Accomodation** | tinyint(1) DEFAULT NULL | Accomodation type |
| **ESIApplicable** | tinyint(1) DEFAULT NULL |  |
| **IsOwnCentre** | tinyint(1) DEFAULT NULL |  |
| **ThumbAttendance** | tinyint(1) DEFAULT NULL |  |
| **Period** | tinyint unsigned DEFAULT NULL |  |
| **CentreSize** | varchar(10) DEFAULT NULL |  |
| **PackingType** | char(1) DEFAULT NULL |  |
| **RollerWiseBidiType** | char(1) DEFAULT NULL |  |
| **CentreClosed** | tinyint unsigned DEFAULT NULL |  |

ENGINE=InnoDB DEFAULT CHARSET=latin1;

PRIMARY KEY (CentreCode)

FOREIGN KEYS (RefNoteNumber)

Relation with tables:

tblpaymaster(CentreCode(FK), NoteNumber(PK))

tblemployees(CentreCode(FK))

tblpayemployees(CentreCode(FK))

[4] **tbldesignations:** 7 fieldscontaining information related to employee designation related data. Among its fields, there can be found:

|  |  |  |
| --- | --- | --- |
| **Field name** | **Data type and Definition** | **Description** |
| **KeyDesignationCode** | smallint NOT NULL | Employee designation code |
| **Description** | varchar(100) DEFAULT NULL | Designation description |
| **CategoryCode** | tinyint unsigned NOT NULL | Category of the code |
| **ServiceType** | tinyint unsigned NOT NULL | Type of service |
| **EmployeeType** | tinyint unsigned NOT NULL | Type of Employee |
| **HigherDesgnCode** | smallint DEFAULT NULL | Code of Higher designation |
| **AppraisalForm** | tinyint unsigned NOT NULL | Appraisal form information |

ENGINE=InnoDB DEFAULT CHARSET=latin1;

PRIMARY KEY (DesignationCode)

FOREIGN KEYS(ServiceType, EmployeeType)

Relation with tables:

tblpayemployees(DesignationCode(FK))

tblemployeetypes(EmployeeType(PK))

tblservicetypes(ServiceType(PK))

tblemployees(DesignationCode (FK))

[5] **tblemployees:** 62 fieldscontaining information related to employee related data. Among its fields, they can be found:

|  |  |  |
| --- | --- | --- |
| **Field name** | **Data type and Definition** | **Description** |
| **LetterNumber** | varchar(25) DEFAULT NULL |  |
| **LetterDate** | datetime DEFAULT NULL |  |
| **DOJ** | datetime NOT NULL | Date Of Join |
| **EmployeeNumber** | int NOT NULL |  |
| **CentreCode** | int NOT NULL |  |
| **BranchCode** | int DEFAULT NULL |  |
| **CategoryCode** | tinyint unsigned NOT NULL |  |
| **DepartmentCode** | smallint DEFAULT NULL |  |
| **SectionCode** | smallint DEFAULT NULL |  |
| **EmployeeType** | tinyint unsigned NOT NULL |  |
| **ServiceType** | tinyint unsigned NOT NULL |  |
| **ServiceStatus** | tinyint unsigned NOT NULL |  |
| **OfficiatingDesignationCode** | smallint DEFAULT NULL |  |
| **FatherName** | varchar(30) DEFAULT NULL |  |
| **DOB** | datetime DEFAULT NULL |  |
| **CertificateType** | tinyint unsigned DEFAULT NULL |  |
| **CertificateNo** | varchar(25) DEFAULT NULL |  |
| **CertificateDate** | datetime DEFAULT NULL |  |
| **Age** | tinyint unsigned DEFAULT NULL |  |
| **Sex** | char(1) DEFAULT NULL | F/M |
| **LicenceNumber** | varchar(25) DEFAULT NULL |  |
| **ExpiryDate** | datetime DEFAULT NULL |  |
| **Name** | varchar(50) DEFAULT NULL |  |
| **NickName** | varchar(50) DEFAULT NULL |  |
| **MaritalStatus** | tinyint unsigned DEFAULT NULL |  |
| **Religion** | tinyint unsigned DEFAULT NULL |  |
| **Nationality** | tinyint unsigned DEFAULT NULL |  |
| **ExtraCurricum** | varchar(400) DEFAULT NULL |  |
| **MotherLanguage** | tinyint unsigned DEFAULT NULL |  |
| **ApplicationNumber** | int DEFAULT NULL |  |
| **ApplicationDate** | datetime DEFAULT NULL |  |
| **LocationType** | tinyint unsigned NOT NULL |  |
| **LocationCode** | int DEFAULT NULL |  |
| **FunctionalDesignation** | smallint NOT NULL |  |
| **DesignationCode** | smallint NOT NULL |  |
| **IsActive** | char(1) NOT NULL |  |
| **IsFDActive** | tinyint(1) DEFAULT NULL |  |
| **ReportingToFD** | smallint DEFAULT NULL |  |
| **DeputationLocationType** | smallint DEFAULT NULL |  |
| **DeputationLocationCode** | int DEFAULT NULL |  |
| **ConfirmDate** | datetime DEFAULT NULL |  |
| **DivisionCode** | tinyint unsigned NOT NULL |  |
| **SectorCode** | smallint NOT NULL |  |
| **GodownCode** | smallint DEFAULT NULL |  |
| **AreaCode** | tinyint unsigned NOT NULL |  |
| **PANNumber** | varchar(25) DEFAULT NULL |  |
| **IssueDate** | datetime DEFAULT NULL |  |
| **JoiningBasic** | decimal(12,2) DEFAULT NULL |  |
| **PresentBasic** | decimal(12,2) DEFAULT NULL |  |
| **StatusCode** | tinyint unsigned DEFAULT NULL |  |
| **IsMPBuffer** | tinyint(1) DEFAULT NULL |  |
| **OwnResidence** | tinyint(1) DEFAULT NULL |  |
| **TerminationStatus** | tinyint(1) DEFAULT NULL |  |
| **IsSuspended** | tinyint(1) DEFAULT NULL |  |
| **RetirementDate** | datetime DEFAULT NULL |  |
| **SeqNo** | int NOT NULL |  |
| **BloodGroup** | varchar(10) DEFAULT NULL |  |
| **InActiveNNo** | varchar(25) DEFAULT NULL |  |

ENGINE=InnoDB DEFAULT CHARSET=latin1;

PRIMARY KEY(-No-)

FOREIGN KEYS(CentreCode, EmployeeType, ServiceType, ServiceStatus, LocationType, LocationCode, DesignationCode)

Relation with tables:

tblcentermaster(CentreCode(PK))

tbllocations(LocationType(PK), LocationCode(PK))

tblemployeetypes(EmployeeType(PK))

tbldesignations(DesignationCode(PK))

tblservicetypes(ServiceType(PK))

[6] **tblemployeetypes:** 2 fieldscontaining information related to employee type related data. Among its fields, there can be found:

|  |  |  |
| --- | --- | --- |
| **Field name** | **Data type and Definition** | **Description** |
| **Key EmployeeType** | tinyint unsigned NOT NULL |  |
| **Description** | ` varchar(15) NOT NULL |  |

ENGINE=InnoDB DEFAULT CHARSET=latin1;

PRIMARY KEY (`EmployeeType`)

Relation with tables:

tblpayemployees(EmployeeType (FK))

tbldesignations(EmployeeType (FK))

tblpayemployees(EmployeeType(FK))

[7] **tbllocations:** 7 fieldscontaining information related to locations related data. Among its fields, there can be found:

|  |  |  |
| --- | --- | --- |
| **Field name** | **Data type and Definition** | **Description** |
| **Key LocationType** | tinyint unsigned NOT NULL |  |
| **LocTypeName** | varchar(100) NOT NULL |  |
| **Key LocationCode** | int NOT NULL |  |
| **LocCodeName** | varchar(100) NOT NULL |  |
| **HeadCentre** | int DEFAULT NULL |  |

ENGINE=InnoDB DEFAULT CHARSET=latin1;

PRIMARY KEY (`LocationType`,`LocationCode`)

Relation with tables:

tblpaymaster(LocationType (FK), LocationCode (FK))

tblpayemployees(LocationType (FK), LocationCode (FK))

tblemployees(LocationType (FK), LocationCode (FK))

[8] **tblpayemployeeparamdetails:** 13 fieldscontaining information related to employee details related data. Among its fields, there can be found:

|  |  |  |
| --- | --- | --- |
| **Field name** | **Data type and Definition** | **Description** |
| **NoteNumber** | varchar(25) NOT NULL |  |
| **EmployeeNumber** | int NOT NULL |  |
| **ParamCode** | varchar(6) NOT NULL |  |
| **TransValue** | smallint DEFAULT NULL |  |
| **ActualAmount** | decimal(12,2) DEFAULT NULL |  |
| **Amount** | decimal(12,2) DEFAULT NULL |  |
| **EmployerShare** | decimal(12,2) DEFAULT NULL |  |
| **PayType** | char(1) DEFAULT NULL |  |
| **EffectiveFrom** | datetime DEFAULT NULL |  |
| **CalculatedOn** | decimal(15,2) DEFAULT NULL |  |
| **PersonServiceStatus** | tinyint unsigned DEFAULT NULL |  |
| **ParamCalculationRate** | decimal(15,2) DEFAULT NULL |  |
| **EarnedCalculatedOn** | decimal(15,2) DEFAULT NULL |  |

ENGINE=InnoDB DEFAULT CHARSET=latin1;

UNIQUE KEY `U\_PayEmployeeparamDetails` (`NoteNumber`,`EmployeeNumber`,`ParamCode`,`EffectiveFrom`,`PersonServiceStatus`)

FOREIGN KEYS(ServiceType, EmployeeType)

Relation with tables:

tblpaymaster(NoteNumber(PK))

tblservicestatus(ServiceStatus(PK))

[9] **tblpayemployees:** 35 fieldscontaining information related to employee type related data. Among its fields, there can be found:

|  |  |  |
| --- | --- | --- |
| **Field name** | **Data type and Definition** | **Description** |
| **NoteNumber** | varchar(25) NOT NULL |  |
| **EmployeeNumber** | int NOT NULL |  |
| **LocationType** | tinyint unsigned DEFAULT NULL |  |
| **LocationCode** | int DEFAULT NULL |  |
| **GrossPay** | decimal(12,2) DEFAULT NULL |  |
| **Deductions** | decimal(12,2) DEFAULT NULL |  |
| **NetPay** | decimal(12,2) DEFAULT NULL |  |
| **ActualGrossPay** | decimal(12,2) DEFAULT NULL |  |
| **DesignationCode** | smallint DEFAULT NULL |  |
| **Servicetype** | tinyint unsigned DEFAULT NULL |  |
| **EmployeeType** | tinyint unsigned DEFAULT NULL |  |
| **ServiceStatus** | tinyint unsigned DEFAULT NULL |  |
| **CentreCode** | int DEFAULT NULL |  |
| **TotalPaidDays** | decimal(6,2) DEFAULT NULL |  |
| **LastPayAbsentDays** | decimal(6,2) DEFAULT NULL |  |
| **TotalWorkedDays** | decimal(6,2) DEFAULT NULL |  |
| **isPaid** | tinyint(1) DEFAULT NULL |  |
| **ActualPaidDays** | decimal(6,2) DEFAULT NULL |  |
| **ActualNet** | decimal(12,2) DEFAULT NULL |  |
| **Arrers** | decimal(10,2) DEFAULT NULL |  |
| **ArrersPaid** | tinyint(1) DEFAULT NULL |  |
| **EffectiveFrom** | datetime DEFAULT NULL |  |
| **EmpDays** | decimal(5,2) DEFAULT NULL |  |
| **SPPEDays** | decimal(5,2) DEFAULT NULL |  |
| **SPPEPdays** | decimal(5,2) DEFAULT NULL |  |
| **WagePaymentNNO** | varchar(25) DEFAULT NULL |  |
| **WagePaymentNoteNo** | datetime DEFAULT NULL |  |
| **PaymentPeriodDays** | decimal(6,2) DEFAULT NULL |  |
| **DaysAbsent** | decimal(6,2) DEFAULT NULL |  |
| **DayString** | varchar(200) DEFAULT NULL |  |
| **RollerBidi** | int DEFAULT NULL |  |
| **PackerGoodBags** | int DEFAULT NULL |  |
| **packerGoodBidis** | int DEFAULT NULL |  |
| **PackerChatBags** | int DEFAULT NULL |  |
| **PackerChatBidis** | int DEFAULT NULL |  |

ENGINE=InnoDB DEFAULT CHARSET=latin1;

UNIQUE KEY `U\_PayEmployees` (`NoteNumber`,`EmployeeNumber`,`EffectiveFrom`)

FOREIGN KEYS (NoteNumber, LocationType, LocationCode, DesignationCode, EmployeeType, ServiceStatus, CentreCode)

Relation with tables:

tblpaymaster(NoteNumber(PK))

tblcentremaster(CentreCode(PK))

tbllocations(LocationType(PK), LocationCode(PK))

tblemployeetypes(EmployeeType(PK))

tbldesignations(DesignationCode(PK))

tblservicestatus(ServiceStatus(PK))

[10] **tblpaymaster:** 12 fieldscontaining information related to master payment related data. Among its fields, there can be found:

|  |  |  |
| --- | --- | --- |
| **Field name** | **Data type and Definition** | **Description** |
| **Key NoteNumber** | varchar(25) NOT NULL |  |
| **NoteDate** | datetime DEFAULT NULL |  |
| **CentreCode** | int DEFAULT NULL |  |
| **ParamCode** | varchar(6) DEFAULT NULL |  |
| **Fromdate** | datetime DEFAULT NULL |  |
| **ToDate** | datetime DEFAULT NULL |  |
| **PayedServiceType** | smallint DEFAULT NULL |  |
| **PayedEmployeeType** | smallint DEFAULT NULL |  |
| **PayedServiceStatus** | smallint DEFAULT NULL |  |
| **LocationType** | tinyint unsigned DEFAULT NULL |  |
| **LocatonCode** | int DEFAULT NULL |  |
| **StateCode** | tinyint unsigned DEFAULT NULL |  |

ENGINE=InnoDB DEFAULT CHARSET=latin1;

PRIMARY KEY (`NoteNumber`)

FOREIGN KEYS(StateCode, LocationType, LocationCode, )

Relation with tables:

tblstatemaster(StateCode(PK))

tbllocations(LocationType(PK), LocationCode (PK))

tblcentremaster(CentreCode(PK), RefNoteNumber(FK))

tblpayemployees(NoteNumber(FK))

tblpayemployeeparamdetails(NoteNumber(FK))

[11] **tblservicestatus:** 2 fieldscontaining information related to service status related data. Among its fields, there can be found:

|  |  |  |
| --- | --- | --- |
| **Field name** | **Data type and Definition** | **Description** |
| **Key ServiceStatus** | tinyint unsigned NOT NULL |  |
| **Description** | varchar(15) NOT NULL |  |

ENGINE=InnoDB DEFAULT CHARSET=latin1;

PRIMARY KEY (`ServiceStatus`)

Relation with tables:

tblpayemployees(ServiceStatus(FK))

tblemployees(ServiceStatus(FK))

tblpayemployeeparamdetails(ServiceStatus(FK))

[12] **tblservicetypes:** 2 fieldscontaining information related to master payment related data. Among its fields, there can be found:

|  |  |  |
| --- | --- | --- |
| **Field name** | **Data type and Definition** | **Description** |
| **Key ServiceType** | tinyint unsigned NOT NULL |  |
| **Description** | varchar(15) NOT NULL |  |

ENGINE=InnoDB DEFAULT CHARSET=latin1;

PRIMARY KEY (`ServiceType`)

Relation with tables:

tblemployees(ServiceType(FK))

tbldesignations(ServiceType(FK))

[13] **tblstatemaster:** 2 fieldscontaining information related to master state related data. Among its fields, there can be found:

|  |  |  |
| --- | --- | --- |
| **Field name** | **Data type and Definition** | **Description** |
| **Key StateCode** | tinyint unsigned NOT NULL |  |
| **StateName** | varchar(50) DEFAULT NULL |  |

ENGINE=InnoDB DEFAULT CHARSET=latin1;

PRIMARY KEY (`StateCode`)

Relation with tables:

tblpaymaster(StateCode(FK))