# Patient Appointment Application Project

Owner: Lyons Lu

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# **Summary**

The company is creating an application that will allow patient appointments to be scheduled. The application will include the following database.

# **Expectations**

1. The application will store data in a SQL database.
2. The application must use views, stored procedures, and functions.
3. The application must be simple and keep costs at a minimum.
4. A working prototype should be available in a short period of time.

# Document History

Here is an account of changes to this document and any blocking issues.

## Change Log

|  |  |  |
| --- | --- | --- |
| Who | When | What |
|  |  |  |

## Open Issues

|  |  |  |
| --- | --- | --- |
| Who | When | What |
|  |  |  |

## Closed Issues

|  |  |  |
| --- | --- | --- |
| Who | When | What |
|  |  |  |
|  |  |  |

# Solution Naming Conventions

## Database (OLTP)

|  |  |  |  |
| --- | --- | --- | --- |
| Object Type | Convention | Example | Description |
| Table | TableName | Patients | A table used to hold data |
| View | vViewName | vPatients | A saved select statement that provides data |
| Stored Proc. | pProcedureName | pInsPatients | A set of saved statements for data transactions |
| Primary Key Constraint | pkObjectName | pkPatientID | A constraint to enforce Primary Key functionality |
| Foreign Key Constraint | fkObjectNameObjectName | fkAppointmentPatientID | A constraint to enforce Foreign Key functionality |
| Check Constraint | ckObjectName | ckClinicPhoneNumber | A constraint to enforce Domain integrity |
| Unique Constraint | uqObjectName | uqClinicName | A constraint to enforce Unique values |

# **OLTP Database Tables**

## Table Name: Clinics

Description: Contains clinics data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Example | Notes |
| ClinicID | int | 1 | PK, Identity (1,1) |
| ClinicName | nVarchar(100) | Goodwin LLC | Unique |
| ClinicPhoneNumber | nVarchar(100) | 206-123-1234 | Check phone pattern xxx-xxx-xxxx |
| ClinicAddress | nVarchar(100) | 5 University NE |  |
| ClinicCity | nVarchar(100) | Seattle |  |
| ClinicState | nchar(2) | WA |  |
| ClinicZipCode | nVarchar(10) | 98105 | Check postal code xxxxx |

### Constraints

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Column Name | Primary Key | Foreign Key | Not Null | Check | Unique | Default |
| ClinicID | Yes | No | Yes | No | Yes | Yes |
| ClinicName | No | No | Yes | No | Yes | No |
| ClinicPhoneNumber | No | No | Yes | Yes | No | No |
| ClinicAddress | No | No | Yes | No | No | No |
| ClinicCity | No | No | Yes | No | No | No |
| ClinicState | No | No | Yes | No | No | No |
| ClinicZipCode | No | No | Yes | Yes | No | No |

## Table Name: Patients

Description: Contains patients data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Example | Notes |
| PatientID | int | 1 | PK, Identity (1,1) |
| PatientFirstName | nVarchar(100) | Lyons |  |
| PatientLastName | nVarchar(100) | Lu |  |
| PatientPhoneNumber | nVarchar(100) | 206-354-8223 | Check phone pattern xxx-xxx-xxxx |
| PatientAddress | nVarchar(100) | 5 University NE |  |
| PatientCity | nVarchar(100) | Seattle |  |
| PatientState | nchar(2) | WA |  |
| PatientZipCode | nVarchar(10) | 98105 | Check postal code xxxxx |

### Constraints

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Column Name | Primary Key | Foreign Key | Not Null | Check | Unique | Default |
| PatientID | Yes | No | Yes | No | Yes | Yes |
| PatientFirstName | No | No | Yes | No | No | No |
| PatientLastName | No | No | Yes | No | No | No |
| PatientPhoneNumber | No | No | Yes | Yes | No | No |
| PatientAddress | No | No | Yes | No | No | No |
| PatientCity | No | No | Yes | No | No | No |
| PatientState | No | No | Yes | No | No | No |
| PatientZipCode | No | No | Yes | Yes | No | No |

## Table Name: Doctors

Description: Contains doctors data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Example | Notes |
| DoctorID | int | 1 | PK, Identity (1,1) |
| DoctorFirstName | nVarchar(100) | Ginger |  |
| DoctorLastName | nVarchar(100) | Zhang |  |
| DoctorPhoneNumber | nVarchar(100) | 425-319-7739 | Check phone pattern xxx-xxx-xxxx |
| DoctorAddress | nVarchar(100) | 5 University NE |  |
| DoctorCity | nVarchar(100) | Seattle |  |
| DoctorState | nchar(2) | WA |  |
| DoctorZipCode | nVarchar(10) | 98105 | Check postal code xxxxx |

### Constraints

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Column Name | Primary Key | Foreign Key | Not Null | Check | Unique | Default |
| DoctorID | Yes | No | Yes | No | Yes | Yes |
| DoctorFirstName | No | No | Yes | No | No | No |
| DoctorLastName | No | No | Yes | No | No | No |
| DoctorPhoneNumber | No | No | Yes | Yes | No | No |
| DoctorAddress | No | No | Yes | No | No | No |
| DoctorCity | No | No | Yes | No | No | No |
| DoctorState | No | No | Yes | No | No | No |
| DoctorZipCode | No | No | Yes | Yes | No | No |

## Table Name: Appointments

Description: Contains appointments data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Example | Notes |
| AppointmentID | int | 1 | PK, Identity (1,1) |
| AppointmentDateTime | datetime | 2020-05-08 06:00:26 |  |
| AppointmentPatientID | int | 1 | FK |
| AppointmentDoctorID | int | 1 | FK |
| AppointmentClinicID | int | 1 | FK |

### Constraints

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Column Name | Primary Key | Foreign Key | Not Null | Check | Unique | Default |
| AppointmentID | Yes | No | Yes | No | Yes | Yes |
| AppointmentDateTime | No | No | Yes | No | No | No |
| AppointmentPatientID | No | Yes | Yes | No | No | No |
| AppointmentDoctorID | No | Yes | Yes | No | No | No |
| AppointmentClinicID | No | Yes | Yes | No | No | No |

# 

# **OLTP Database Views**

## View Name: vClinics

Description: Selects clinic data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| ClinicID | Clinics.ClinicID | 1 |  |
| ClinicName | Clinics.ClinicName | Goodwin LLC |  |
| ClinicPhoneNumber | Clinics.ClinicPhoneNumber | 206-123-1234 |  |
| ClinicAddress | Clinics.ClinicAddress | 5 University NE |  |
| ClinicCity | Clinics.ClinicCity | Seattle |  |
| ClinicState | Clinics.ClinicState | WA |  |
| ClinicZipCode | Clinics.ClinicZipCode | 98105 |  |

## 

## View Name: vPatients

Description: Selects patients data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| PatientID | Patients.PatientID | 1 |  |
| PatientFirstName | Patients.PatientFirstName | Lyons |  |
| PatientLastName | Patients.PatientLastName | Lu |  |
| PatientPhoneNumber | Patients.PatientPhoneNumber | 206-354-8223 |  |
| PatientAddress | Patients.PatientAddress | 5 University NE |  |
| PatientCity | Patients.PatientCity | Seattle |  |
| PatientState | Patients.PatientState | WA |  |
| PatientZipCode | Patients.PatientZipCode | 98105 |  |

## View Name: vDoctors

Description: Selects doctors data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| DoctorID | Doctors.PatientID | 1 |  |
| DoctorFirstName | Doctors.PatientFirstName | Ginger |  |
| DoctorLastName | Doctors.PatientLastName | Zhang |  |
| DoctorPhoneNumber | Doctors.PatientPhoneNumber | 425-319-7739 |  |
| DoctorAddress | Doctors.PatientAddress | 5 University NE |  |
| DoctorCity | Doctors.PatientCity | Seattle |  |
| DoctorState | Doctors.PatientState | WA |  |
| DoctorZipCode | Doctors.PatientZipCode | 98105 |  |

## View Name: vAppointments

Description: Selects appointments data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| AppointmentID | Appointments.AppointmentID | 1 |  |
| AppointmentDateTime | Appointments.AppointmentDateTime | 2020-05-08 06:00:26 |  |
| AppointmentPatientID | Appointments.AppointmentPatientID | 1 |  |
| AppointmentDoctorID | Appointments.AppointmentDoctorID | 1 |  |
| AppointmentClinicID | Appointments.AppointmentClinicID | 1 |  |

## View Name: vAppointmentsByPatientsDoctorsAndClinics

Description: Selects joined patients, doctors, clinics, and appointments data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| AppointmentID | Appointments.AppointmentID | 1 | Join Column |
| AppointmentDate | Appointments.AppointmentDate | 5/20/2020 |  |
| AppointmentTime | Appointments.AppointmentTime | 12:00 |  |
| PatientID | Patients.PatientID | 1 | Join Column |
| PatientName | Patients.PatientFirstName, Patients.PatientsLastName | Lyons Lu |  |
| PatientPhoneNumber | Patients.PatientPhoneNumber | 206-354-8223 |  |
| PatientAddress | Patients.PatientAddress | 5 University NE |  |
| PatientCity | Patients.PatientCity | Seattle |  |
| PatientState | Patients.PatientState | WA |  |
| PatientZipCode | Patients.PatientZipCode | 98105 |  |
| DoctorID | Doctors.DoctorID | 1 | Join Column |
| DoctorName | Doctors.DoctorFirstName, Doctor.DoctorLastName | Ginger Zhang |  |
| DoctorPhoneNumber | Doctors.DoctorPhoneNumber | 425-319-7739 |  |
| DoctorAddress | Doctors.DoctorAddress | 5 University NE |  |
| DoctorCity | Doctors.DoctorCity | Seattle |  |
| DoctorState | Doctors.DoctorState | WA |  |
| DoctorZipCode | Doctors.DoctorZipCode | 98105 |  |
| ClinicID | Clinics.ClinicID | 1 | Join Column |
| ClinicName | Clinics.ClinicName | Goodwin LLC |  |
| ClinicPhoneNumber | Clinics.ClinicPhoneNumber | 206-123-1234 |  |
| ClinicAddress | Clinics.ClinicAddress | 5 University NE |  |
| ClinicCity | Clinics.ClinicCity | Seattle |  |
| ClinicState | Clinics.ClinicState | WA |  |
| ClinicZipCode | Clinics.ClinicZipCode | 98105 |  |

## View Name: vClinicDoctors

Description: Selects joined doctors, clinics, and appointments data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| ClincName | Clinics.ClinicName | Goodwin LLC |  |
| AppointmentYear | Appointments.AppointmentDate | 2020 | Get the year |
| DoctorCount | Doctors.DoctorID | 5 | Count how many |

## View Name: vStatePatients

Description: Selects joined patients, clinics, and appointments data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| ClincState | Clinics.ClinicState | LA |  |
| AppointmentYear | Appointments.AppointmentDate | 2020 | Get the year |
| PatientCount | Patients.PatientID | 5 | Count how many |

# **OLTP Database Stored Procedures**

## Stored Procedure Name: pInsClinics

Description: Inserts clinics data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @ClinicID | int | Output | 1 | Returns Inserted ID using @@Identity |
| @ClinicName | nvarchar(100) | Input | Goodwin LLC |  |
| @ClinicPhoneNumber | nvarchar(100) | Input | 206-123-1234 |  |
| @ClinicAddress | nvarchar(100) | Input | 5 University NE |  |
| @ClinicCity | nvarchar(100) | Input | Seattle |  |
| @ClinicState | nchar(2) | Input | WA |  |
| @ClinicZipCode | nvarchar(10) | Input | 98105 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA |  | Return | 1 | 1 = No error  -1 = General error |
| @ClinicID | int | Output | 1 | Returns Inserted ID using @@Identity |

## Stored Procedure Name: pInsPatients

Description: Inserts patients data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @PatientID | int | Output | 1 | Returns Inserted ID using @@Identity |
| @PatientFirstName | nvarchar(100) | Input | Lyons |  |
| @PatientLastName | nvarchar(100) | Input | Lu |  |
| @PatientPhoneNumber | nvarchar(100) | Input | 206-354-8223 |  |
| @PatientAddress | nvarchar(100) | Input | 5 University NE |  |
| @PatientCity | nvarchar(100) | Input | Seattle |  |
| @PatientState | nchar(2) | Input | WA |  |
| @PatientZipCode | Nvarchar(10) | Input | 98105 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA |  | Return | 1 | 1 = No error  -1 = General error |
| @PatientID | int | Output | 1 | Returns Inserted ID using @@Identity |

## Stored Procedure Name: pInsDoctors

Description: Inserts doctors data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @DoctorID | int | Output | 1 | Returns Inserted ID using @@Identity |
| @DoctorFirstName | nvarchar(100) | Input | Ginger |  |
| @DoctorLastName | nvarchar(100) | Input | Zhang |  |
| @DoctorPhoneNumber | nvarchar(100) | Input | 425-319-7739 |  |
| @DoctorAddress | nvarchar(100) | Input | 5 University NE |  |
| @DoctorCity | nvarchar(100) | Input | Seattle |  |
| @DoctorState | nchar(2) | Input | WA |  |
| @DoctorZipCode | Nvarchar(10) | Input | 98105 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA |  | Return | 1 | 1 = No error  -1 = General error |
| @DoctorID | int | Output | 1 | Returns Inserted ID using @@Identity |

## Stored Procedure Name: pInsAppointments

Description: Inserts appointment data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @AppointmentID | int | Output | 1 | Returns Inserted ID using @@Identity |
| @AppointmentDateTime | datetime | Input | 2019-12-28 07:37:20 |  |
| @AppointmentPatientID | int | Input | 1 | Foreign key |
| @AppointmentDoctorID | int | Input | 1 | Foreign key |
| @AppointmentClinicID | int | Input | 1 | Foreign key |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA |  | Return | 1 | 1 = No error  -1 = General error |
| @AppointmentID | int | Output | 1 | Returns Inserted ID using @@Identity |

## Stored Procedure Name: pUpdClinics

Description: Updates clinics data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @ClinicID | int | Input | 1 |  |
| @ClinicName | nvarchar(100) | Input | Goodwin LLC |  |
| @ClinicPhoneNumber | nvarchar(100) | Input | 206-123-1234 |  |
| @ClinicAddress | nvarchar(100) | Input | 5 University NE |  |
| @ClinicCity | nvarchar(100) | Input | Seattle |  |
| @ClinicState | nchar(2) | Input | WA |  |
| @ClinicZipCode | nvarchar(10) | Input | 98105 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA |  | Return | 1 | 1 = No error  -1 = General error |

## Stored Procedure Name: pUpdPatients

Description: Updates patients data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @PatientID | int | Input | 1 |  |
| @PatientFirstName | nvarchar(100) | Input | Lyons |  |
| @PatientLastName | nvarchar(100) | Input | Lu |  |
| @PatientPhoneNumber | nvarchar(100) | Input | 206-354-8223 |  |
| @PatientAddress | nvarchar(100) | Input | 5 University NE |  |
| @PatientCity | nvarchar(100) | Input | Seattle |  |
| @PatientState | nchar(2) | Input | WA |  |
| @PatientZipCode | Nvarchar(10) | Input | 98105 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA |  | Return | 1 | 1 = No error  -1 = General error |

## Stored Procedure Name: pUpdAppointments

Description: Updates appointments data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @AppointmentID | int | Input | 1 |  |
| @AppointmentDateTime | datetime | Input | 2019-12-28 07:37:20 |  |
| @AppointmentPatientID | int | Input | 1 | Foreign key |
| @AppointmentDoctorID | int | Input | 1 | Foreign Key |
| @AppointmentClinicID | int | Input | 1 | Foreign Key |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA |  | Return | 1 | 1 = No error  -1 = General error |

## Stored Procedure Name: pDelClinics

Description: delete clinic data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @ClinicID | int | Input | 1 | Delete clinics related appointment first |

### Results

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Type | Example | Notes |
| NA | Return Code | 1 | 1 = No error  -1 = General error |

## Stored Procedure Name: pDelDoctors

Description: delete doctor data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @DoctorID | int | Input | 1 | Delete doctors related appointment first |

### Results

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Type | Example | Notes |
| NA | Return Code | 1 | 1 = No error  -1 = General error |

## Stored Procedure Name: pDelPatients

Description: delete patient data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @PatientID | int | Input | 1 | Delete patients related appointment first |

### Results

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Type | Example | Notes |
| NA | Return Code | 1 | 1 = No error  -1 = General error |

## Stored Procedure Name: pDelAppointments

Description: delete appointment data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @AppointmentID | int | Input | 1 |  |

### Results

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Type | Example | Notes |
| NA | Return Code | 1 | 1 = No error  -1 = General error |