# Patient Appointment Application Project

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Date: 06-12-2020

# **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 |
| AKannadaguli | 06-06-2020 | Created Proposed Entity Relationship Diagram |
| AKannadaguli | 06-11-2020 | Implemented Database |
| AKannadaguli | 06-12-2020 | Inserted Sample Data |
| AKannadaguli | 06-12-2020 | Created Reporting Views |
| AKannadaguli | 06-12-2020 | Created Sample Reports |

## Open Issues

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

## Closed Issues

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

# Solution Naming Conventions

## Database (OLTP)

|  |  |  |  |
| --- | --- | --- | --- |
| Object Type | Convention | Example | Description |
| Table | TableName | Clinics | A table used to hold data |
| View | vViewName | vClinics | A saved select statement that provides data |
| Stored Proc. | pProcedureName | pInsClinics | A set of saved statements for data transactions |
| Primary Key Constraint | pkObjectName | pkClinics | A constraint to enforce Primary Key functionality |
| Foreign Key Constraint | fkObjectName | fkAppointmentClinicID | A constraint to enforce Foreign Key functionality |
| Check Constraint | ckObjectName | ckClinicZipCode | A constraint to enforce Domain integrity |
| Unique Constraint | uObjectName | uClinicName | A constraint to enforce Unique values |

# **OLTP Database Tables**

## Table Name: Clinics

Description: Contains clinic data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Example | Notes |
| ClinicID | int | 4 | Auto-numbered Primary Key column |
| ClinicName | nVarchar(100) | Swedish Primary Care | Unique |
| ClinicPhoneNumber | nVarchar(100) | 425-123-4567 | Check to match Phone pattern 206-123-1234 |
| ClinicAddress | nVarchar(100) | 1234 SE Fall City Road |  |
| ClinicCity | nVarchar(100) | Fall City |  |
| ClinicState | nchar(2) | WA |  |
| ClinicZipCode | nVarchar(10) | 98024 | Check to match ZipCode code pattern |

### Constraints

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Column Name | Primary Key | Foreign Key | Not Null | Check | Unique | Default |
| ClinicID | Yes | No | Yes | No | No | No |
| ClinicName | No | Yes | 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 patient data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Example | Notes |
| PatientID | int | 18 | Auto-numbered Primary Key column |
| PatientFirstName | nVarchar(100) | Arty |  |
| PatientLastName | nVarchar(100) | Fischel |  |
| PatientPhoneNumber | nVarchar(100) | 206-123-4567 | Check to match Phone pattern 206-123-1234 |
| PatientAddress | nVarchar(100) | 1233 NE Applebees St. |  |
| PatientCity | nVarchar(100) | Seattle |  |
| PatientState | nchar(2) | WA |  |
| PatientZipCode | nVarchar(10) | 98105 | Check to match ZipCodecode pattern |

### Constraints

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Column Name | Primary Key | Foreign Key | Not Null | Check | Unique | Default |
| PatientID | Yes | No | Yes | No | No | No |
| 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 doctor data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Example | Notes |
| DoctorID | int | 8 | Auto-numbered Primary Key column |
| DoctorFirstName | nVarchar(100) | Jay |  |
| DoctorLastName | nVarchar(100) | Walker |  |
| DoctorPhoneNumber | nVarchar(100) | 704-849-0395 | Check to match Phone pattern 206-123-1234 |
| DoctorAddress | nVarchar(100) | 5436 SE Taco Bell Ave. |  |
| DoctorCity | nVarchar(100) | Bellevue |  |
| DoctorState | nchar(2) | WA |  |
| DoctorZipCode | nVarchar(10) | 98008 | Check to match ZipCodecode pattern |

### Constraints

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Column Name | Primary Key | Foreign Key | Not Null | Check | Unique | Default |
| DoctorID | Yes | No | Yes | No | No | No |
| 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 appointment data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Example | Notes |
| AppointmentID | int | 15 | Auto-numbered Primary Key column |
| AppointmentDateTime | datetime | 2020-06-15 07:53:50.000 |  |
| AppointmentPatientID | int | 18 | References Patients |
| AppointmentDoctorID | int | 8 | References Doctors |
| AppointmentClinicID | int | 4 | References Clinics |

### Constraints

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Column Name | Primary Key | Foreign Key | Not Null | Check | Unique | Default |
| AppointmentID | Yes | No | Yes | No | No | No |
| 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 | 4 |  |
| ClinicName | Clinics.ClinicName | Swedish Primary Care |  |
| ClinicPhoneNumber | Clinics.ClinicPhoneNumber | 425-123-4567 |  |
| ClinicAddress | Clinics.ClinicAddress | 1234 SE Fall City Road |  |
| ClinicCity | Clinics.ClinicCity | Fall City |  |
| ClinicState | Clinics.ClinicState | WA |  |
| ClinicZipCode | Clinics.ClinicZipCode | 98024 |  |

## View Name: vPatients

Description: Selects patient data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| PatientID | Patients.PatientID | 18 |  |
| PatientFirstName | Patients.PatientFirstName | Arty |  |
| PatientLastName | Patients.PatientLastName | Fischel |  |
| PatientPhoneNumber | Patients.PatientPhoneNumber | 206-123-4567 |  |
| PatientAddress | Patients.PatientAddress | 1233 NE Applebees St. |  |
| PatientCity | Patients.PatientCity | Seattle |  |
| PatientState | Patients.PatientState | WA |  |
| PatientZipCode | Patients.PatientZipCode | 98105 |  |

## View Name: vDoctors

Description: Selects doctor data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| DoctorID | Doctors.DoctorID | 8 |  |
| DoctorFirstName | Doctors.DoctorFirstName | Jay |  |
| DoctorLastName | Doctors.DoctorLastName | Walker |  |
| DoctorPhoneNumber | Doctors.DoctorPhoneNumber | 704-849-0395 |  |
| DoctorAddress | Doctors.DoctorAddress | 5436 SE Taco Bell Ave. |  |
| DoctorCity | Doctors.DoctorCity | Bellevue |  |
| DoctorState | Doctors.DoctorState | WA |  |
| DoctorZipCode | Doctors.DoctorZipCode | 98008 |  |

## View Name: vAppointments

Description: Selects appointment data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| AppointmentID | Appointments.AppointmentID | 15 |  |
| AppointmentDateTime | Appointments.AppointmentDateTime | 2020-06-15 07:53:50.000 |  |
| AppointmentPatientID | Appointments.AppointmentPatientID | 18 |  |
| AppointmentDoctorID | Appointments.AppointmentDoctorID | 8 |  |
| AppointmentClinicID | Appointments.AppointmentClinicID | 4 |  |

## View Name: vAppointmentsByPatientsDoctorsAndClinics

Description: Selects appointments by patients, doctors, and clinics

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| AppointmentID | Appointments.AppointmentID | 15 |  |
| AppointmentDate | Appointments.AppointmentDate | 06/15/2020 | Format as US MM/DD/YYYY from AppointmentDateTime |
| AppointmentTime | Appointments.AppointmentTime | 15:53 | Format as 24 hour HH:MM from AppointmentDateTime |
| PatientID | Patients.PatientID | 18 |  |
| PatientName | Patients.PatientName | Arty Fischel | First and Last Name |
| PatientPhoneNumber | Patients.PatientPhoneNumber | 206-123-4567 |  |
| PatientAddress | Patients.PatientAddress | 1233 NE Applebees St. |  |
| PatientCity | Patients.PatientCity | Seattle |  |
| PatientState | Patients.PatientState | WA |  |
| PatientZipCode | Patients.PatientZipCode | 98105 |  |
| DoctorID | Doctors.DoctorID | 8 |  |
| DoctorName | Doctors.DoctorName | Jay Walker | First and Last Name |
| DoctorPhoneNumber | Doctors.DoctorPhoneNumber | 704-849-0395 |  |
| DoctorAddress | Doctors.DoctorAddress | 5436 SE Taco Bell Ave. |  |
| DoctorCity | Doctors.DoctorCity | Bellevue |  |
| DoctorState | Doctors.DoctorState | WA |  |
| DoctorZipCode | Doctors.DoctorZipCode | 98008 |  |
| ClinicID | Clinics.ClinicID | 4 |  |
| ClinicName | Clinics.ClinicName | Swedish Primary Care |  |
| ClinicPhoneNumber | Clinics.ClinicPhoneNumber | 425-123-4567 |  |
| ClinicAddress | Clinics.ClinicAddress | 1234 SE Fall City Road |  |
| ClinicCity | Clinics.ClinicCity | Fall City |  |
| ClinicState | Clinics.ClinicState | WA |  |
| ClinicZipCode | Clinics.ClinicZipCode | 98024 |  |

## View Name: vPatientsByDoctor

Description: Selects patients by doctor

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| DoctorID | Doctors.DoctorID | 8 |  |
| DoctorName | Doctors.DoctorName | Jay Walker | First and Last Name |
| PatientID | Patients.PatientID | 18 |  |
| PatientName | Patients.PatientName | Arty Fischel | First and Last Name |

## View Name: vDoctorsByClinic

Description: Selects doctors by clinic

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| ClinicID | Clinics.ClinicID | 4 |  |
| ClinicName | Clinics.ClinicName | Swedish Primary Care |  |
| DoctorID | Doctors.DoctorID | 8 |  |
| DoctorName | Doctors.DoctorName | Jay Walker | First and Last Name |

## View Name: vClinicsDoctorsAndPatientsByAppointmentDateAndTime

Description: Selects clinics, doctors, and patients by appointment date and time

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| ClinicID | Clinics.ClinicID | 4 |  |
| ClinicName | Clinics.ClinicName | Swedish Primary Care |  |
| DoctorID | Doctors.DoctorID | 8 |  |
| DoctorName | Doctors.DoctorName | Jay Walker | First and Last Name |

# **OLTP Database Stored Procedures**

## Stored Procedure Name: pInsClinics

Description: Inserts new entity into Clinics Table

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| ClinicID | int | Output | 4 | Captures newly created AutoID |
| ClinicName | nVarchar(100) | Input | Swedish Primary Care |  |
| ClinicPhoneNumber | nVarchar(100) | Input | 425-123-4567 |  |
| ClinicAddress | nVarchar(100) | Input | 1234 SE Fall City Road |  |
| ClinicCity | nVarchar(100) | Input | Fall City |  |
| ClinicState | nchar(2) | Input | WA |  |
| ClinicZipCode | nVarchar(10) | Input | 98024 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| ClinicID | int | Return | 4 | + AutoID = No error  - AutoID = Most likely a Unique constraint error |

## Stored Procedure Name: pUpdClinics

Description: Updates existing entity in Clinics Table

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| ClinicID | int | Input | 4 |  |
| ClinicName | nVarchar(100) | Input | Swedish Primary Care |  |
| ClinicPhoneNumber | nVarchar(100) | Input | 425-123-4567 |  |
| ClinicAddress | nVarchar(100) | Input | 1234 SE Fall City Road |  |
| ClinicCity | nVarchar(100) | Input | Fall City |  |
| ClinicState | nchar(2) | Input | WA |  |
| ClinicZipCode | nVarchar(10) | Input | 98024 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | int | Return | +1 | +1 = No error  -1 = Probably Unique constraint error |

## Stored Procedure Name: pDelClinics

Description: Deletes existing entity into Clinics Table, and any entities in Appointments Table referencing deleted Clinic entity

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| ClinicID | int | Input | 4 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | int | Return | +1 | +1 = No error  -1 = Probably Unique constraint error |

## Stored Procedure Name: pInsPatients

Description: Inserts new entity into Patients Table

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| PatientID | int | Output | 18 | Captures newly created AutoID |
| PatientFirstName | nVarchar(100) | Input | Arty |  |
| PatientLastName | nVarchar(100) | Input | Fischel |  |
| PatientPhoneNumber | nVarchar(100) | Input | 206-123-4567 |  |
| PatientAddress | nVarchar(100) | Input | 1233 NE Applebees St. |  |
| PatientCity | nVarchar(100) | Input | Seattle |  |
| PatientState | nchar(2) | Input | WA |  |
| PatientZipCode | nVarchar(10) | Input | 98105 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| PatientID | int | Return | 18 | + AutoID = No error  - AutoID = Most likely a Unique constraint error |

## Stored Procedure Name: pUpdPatients

Description: Updates existing entity in Patients Table

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| PatientID | int | Input | 18 |  |
| PatientFirstName | nVarchar(100) | Input | Arty |  |
| PatientLastName | nVarchar(100) | Input | Fischel |  |
| PatientPhoneNumber | nVarchar(100) | Input | 206-123-4567 |  |
| PatientAddress | nVarchar(100) | Input | 1233 NE Applebees St. |  |
| PatientCity | nVarchar(100) | Input | Seattle |  |
| PatientState | nchar(2) | Input | WA |  |
| PatientZipCode | nVarchar(10) | Input | 98105 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | int | Return | +1 | +1 = No error  -1 = Probably Unique constraint error |

## Stored Procedure Name: pDelPatients

Description: Deletes existing entity into Patients Table, and any entities in Appointments Table referencing deleted Patient entity

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| PatientID | int | Input | 18 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | int | Return | +1 | +1 = No error  -1 = Probably Unique constraint error |

## Stored Procedure Name: pInsDoctors

Description: Inserts new entity into Doctors Table

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| DoctorID | int | Output | 8 | Captures newly created AutoID |
| DoctorFirstName | nVarchar(100) | Input | Jay |  |
| DoctorLastName | nVarchar(100) | Input | Walker |  |
| DoctorPhoneNumber | nVarchar(100) | Input | 704-849-0395 |  |
| DoctorAddress | nVarchar(100) | Input | 5436 SE Taco Bell Ave. |  |
| DoctorCity | nVarchar(100) | Input | Bellevue |  |
| DoctorState | nchar(2) | Input | WA |  |
| DoctorZipCode | nVarchar(10) | Input | 98008 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| DoctorID | int | Return | 8 | + AutoID = No error  - AutoID = Most likely a Unique constraint error |

## Stored Procedure Name: pUpdDoctors

Description: Updates existing entity in Doctors Table

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| DoctorID | int | Input | 8 |  |
| DoctorFirstName | nVarchar(100) | Input | Jay |  |
| DoctorLastName | nVarchar(100) | Input | Walker |  |
| DoctorPhoneNumber | nVarchar(100) | Input | 704-849-0395 |  |
| DoctorAddress | nVarchar(100) | Input | 5436 SE Taco Bell Ave. |  |
| DoctorCity | nVarchar(100) | Input | Bellevue |  |
| DoctorState | nchar(2) | Input | WA |  |
| DoctorZipCode | nVarchar(10) | Input | 98008 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | int | Return | +1 | +1 = No error  -1 = Probably Unique constraint error |

## Stored Procedure Name: pDelDoctors

Description: Deletes existing entity into Doctors Table, and any entities in Appointments Table referencing deleted Doctor entity

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| DoctorID | int | Input | 18 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | int | Return | +1 | +1 = No error  -1 = Probably Unique constraint error |

## Stored Procedure Name: pInsAppointments

Description: Inserts new entity into Appointments Table

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| AppointmentID | int | Output | 15 | Captures newly created AutoID |
| AppointmentDateTime | datetime | Input | 2020-06-15 07:53:50.000 |  |
| AppointmentPatientID | int | Input | 18 |  |
| AppointmentDoctorID | int | Input | 8 |  |
| AppointmentClinicID | int | Input | 4 |  |
| AppointmentPatientID | int | Input | 15 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| AppointmentID | int | Return | 15 | + AutoID = No error  - AutoID = Most likely a Unique constraint error |

## Stored Procedure Name: pUpdAppointments

Description: Updates existing entity in Appointments Table

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| AppointmentID | int | Input | 15 |  |
| AppointmentDateTime | datetime | Input | 2020-06-15 07:53:50.000 |  |
| AppointmentPatientID | int | Input | 18 |  |
| AppointmentDoctorID | int | Input | 8 |  |
| AppointmentClinicID | int | Input | 4 |  |
| AppointmentPatientID | int | Input | 15 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | int | Return | +1 | +1 = No error  -1 = Probably Unique constraint error |

## Stored Procedure Name: pDelAppointments

Description: Deletes existing entity into Appointments Table

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| AppointmentID | int | Input | 15 |  |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | int | Return | +1 | +1 = No error  -1 = Probably Unique constraint error |