# Patient Appointment Application Project

Owner: Nick Hall

Date: 6/7/2020

# **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 |
| Nick Hall | 6/7/2020 | Updated Formal Document |

## Open Issues

|  |  |  |
| --- | --- | --- |
| Who | When | What |
| Nick Hall | 6/6/2020 | Did not include ID print outs on stored insert procedures |

## Closed Issues

|  |  |  |
| --- | --- | --- |
| Who | When | What |
| Nick Hall | 5/25/2020 | Built the data frame for the site |
| Nick Hall | 5/30/2020 | Added in sample data into the database |
| Nick Hall | 5/31/2020 | Created sample reports with views for the database |

# Solution Naming Conventions

## Database (OLTP)

|  |  |  |  |
| --- | --- | --- | --- |
| Object Type | Convention | Example | Description |
| Table | TableName | Products | A table used to hold data |
| View | vViewName | vProducts | A saved select statement that provides data |
| Stored Proc. | pProcedureName | pInsProducts | A set of saved statements for data transactions |
| Primary Key Constraint | pkObjectName | pkProducts | A constraint to enforce Primary Key functionality |
| Foreign Key Constraint | fkObjectNameToObjectName | pkProductsToCategories | A constraint to enforce Foreign Key functionality |
| Check Constraint | ckObjectNamePurpose | ckProductStandardPriceGreaterThanZero | A constraint to enforce Domain integrity |
| Unique Constraint | uObjectName | uProductName | 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 | 1 | PK, Identity (1,1) |
| ClinicName | nvarchar(100) | Urgent Care Seattle | Unique |
| ClinicPhoneNumber | nvarchar(100) | 206-123-1234 | Check to match phone pattern 206-123-1234 |
| ClinicAddress | nvarchar(100) | 1 | FK |
| ClinicCity | nvarchar(100) | Seattle |  |
| ClinicState | nchar(2) | WA |  |
| ClinicZipCode | nvarchar(100) | 98105 | Check to match Zip code pattern |

### Constraints

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

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Example | Notes |
| PatientID | int | 1 | Auto-numbered Primary Key column |
| PatientFirstName | nVarchar(100) | Bob |  |
| PatientLastName | nVarchar(100) | Rob |  |
| PatientPhoneNumber | nVarchar(100) | 206-123-1234 | Check to match Phone pattern 206-123-1234 |
| PatientAddress | nVarchar(100) | 1 |  |
| PatientCity | nVarchar(100) | Seattle |  |
| PatientState | nchar(2) | WA |  |
| PatientZipCode | nVarchar(10) | 98105 | Check to match Zip code 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 | 1 | Auto-numbered Primary Key column |
| DoctorFirstName | nVarchar(100) | Cat |  |
| DoctorLastName | nVarchar(100) | Bill |  |
| DoctorPhoneNumber | nVarchar(100) | 206-123-1234 | Check to match Phone pattern 206-123-1234 |
| DoctorAddress | nVarchar(100) | 1 |  |
| DoctorCity | nVarchar(100) | Seattle |  |
| DoctorState | nchar(2) | WA |  |
| DoctorZipCode | nVarchar(10) | 98105 | Check to match Zip Code 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 | 1 | Auto-numbered Primary Key column |
| AppointmentDateTime | datetime | 11/06/2020 11:00:00 PM |  |
| AppointmentPatientID | int | 1 | References Patients |
| AppointmentDoctorID | int | 1 | References Doctors |
| AppointmentClinicID | int | 1 | References Clinics |

### Constraints

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Column Name | Primary Key | Foreign Key | Not Null | Check | Unique | Default |
| AppointmentID | Yes | No | No | 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 | 1 |  |
| ClinicName | Clinics.ClinicName | Urgent Care Seattle |  |
| ClinicPhoneNumber | Clinics.ClinicPhoneNumber | 206-123-1234 |  |
| ClinicAddress | Clinics.ClinicAddress | 1234 4th ave S |  |
| ClinicCity | Clinics.ClinicCity | Seattle |  |
| ClinicState | Clinics.ClinicState | WA |  |
| ClinicZipCode | Clinics.ClinicZipCode | 98105 |  |

## View Name: vPatients

Description: Selects patient data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| PatientID | Patients.PatientID | 1 |  |
| PatientFirstName | Patients.PatientFirstName | Bob |  |
| PatientLastName | Patients.PatientLastName | Rob |  |
| PatientPhoneNumber | Patients.PatientPhoneNumber | 206-123-1234 |  |
| PatientAddress | Patients.PatientAddress | 1234 4th ave S |  |
| 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 | 1 |  |
| DoctorFirstName | Doctors.DoctorFirstName | Bob |  |
| DoctorLastName | Doctors.octorLastName | Rob |  |
| DoctorPhoneNumber | Doctors.DoctorPhoneNumber | 206-123-1234 |  |
| DoctorAddress | Doctors.DoctorAddress | 1234 4th ave S |  |
| DoctorCity | Doctors.DoctorCity | Seattle |  |
| DoctorState | Doctors.DoctorState | WA |  |
| DoctorZipCode | Doctors.DoctorZipCode | 98105 |  |

## View Name: vAppointments

Description: Selects appointment data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| AppointmentID | Appointments.AppointmentID | 1 |  |
| AppointmentDateTime | Appointments.AppointmentDateTime | 11/06/2020 11:00 |  |
| AppointmentPatientID | Appointments.AppointmentPatientID | 1 |  |
| AppointmentDoctorID | Appointments.AppointmentDoctorID | 1 |  |
| AppointmentClinicID | Appointments.AppointmentClinicID | 1 |  |

## View Name: vAppointmentsByPatientsDoctorsAndClinics

Description: Selects joined appointment, patient, doctor and clinic data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| AppointmentID | Appointments.AppointmentID | 1 |  |
| AppointmentDate | Appointments.AppointmentDateTime | 11/06/2020 |  |
| AppointmentTime | Appointments.AppointmentDateTime | 11:00:00 PM |  |
| PatientID | Patients.PatientID | 1 | Join by |
| PatientName | Patients.PatientFirstName & Patients.PatientLastName | Bob Rob | Join First and Last Name |
| PatientPhoneNumber | Patients.PatientPhoneNumber | 206-123-1234 |  |
| PatientAddress | Patients.PatientAddress | 1234 4th ave S |  |
| PatientCity | Patients.PatientCity | Seattle |  |
| PatientState | Patients.PatientState | WA |  |
| PatientZipCode | Patients.PatientZipCode | 98105 |  |
| DoctorID | Doctors.DoctorID | 1 | Join by |
| DoctorName | Doctors.octorLastName & Doctors.DoctorFirstName | Bob Rob | Combine First and Last name |
| DoctorPhoneNumber | Doctors.DoctorPhoneNumber | 206-123-1234 |  |
| DoctorAddress | Doctors.DoctorAddress | 1234 4th ave S |  |
| DoctorCity | Doctors.DoctorCity | Seattle |  |
| DoctorState | Doctors.DoctorState | WA |  |
| DoctorZipCode | Doctors.DoctorZipCode | 98105 |  |
| ClinicID | Clinics.ClinicID | 1 | Join by |
| ClinicName | Clinics.ClinicName | Urgent Care Seattle |  |
| ClinicPhoneNumber | Clinics.ClinicPhoneNumber | 206-123-1234 |  |
| ClinicAddress | Clinics.ClinicAddress | 1234 4th ave S |  |
| ClinicCity | Clinics.ClinicCity | Seattle |  |
| ClinicState | Clinics.ClinicState | WA |  |
| ClinicZipCode | Clinics.ClinicZipCode | 98105 |  |

## View Name: vAppointmentsPerPatient

Description: Selects joined appointment and patient data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| PatientID | Patients.PatientID | 1 | Join by |
| PatientName | Patients.PatientFirstName & Patients.PatientLastName | Bob Rob | Comines first and last name |
| Appointments | Appointments.PatientID | 1 | Count number of appointmetns |

## View Name: vAppointmentsPerClinic

Description: Selects joined appointment and patient data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| ClinicID | Clinics.ClinicID | 1 | Join by |
| ClinicName | Clinics.ClinicName | Pugent Sound Clinic | Comines first and last name |
| Appointments | Appointments.ClinictID | 1 | Count number of appointments |

## View Name: vAppointmentsPerClinics

Description: Selects joined appointment and patient data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| DoctorID | Patients.PatientID | 1 | Join by |
| DoctorName | Doctors.octorLastName & Doctors.DoctorFirstName | Bob Rob | Comines first and last name |
| Appointments | Appointments.PatientID | 1 | Count number of appointmetns |

## 

# **OLTP Database Stored Procedures**

## Stored Procedure Name: pInsClinics

Description: Inserts clinic data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @ClinicID | int | Output | 1 | Returns Inserted ID using @@Identity |
| @ClinicName | nVarchar(100) | Input | Urgent Care Seattle |  |
| @ClinicPhoneNumber | nVarchar(100) | Input | 206-552-7108 |  |
| @ClinicAddress | nVarchar(100) | Input | 4540 University Way 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: pUpdClinics

Description: Updates clinic data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @ClinicID | int | Input | 1 |  |
| @ClinicName | nVarchar(100) | Input | Urgent Care Seattle |  |
| @ClinicPhoneNumber | nVarchar(100) | Input | (206)552-7108 |  |
| @ClinicAddress | nVarchar(100) | Input | 4540 University Way NE |  |
| @ClinicCity | nVarchar(100) | Input | Seattle |  |
| @ClinicState | nchar(2) | Input | WA |  |
| @ClinicZipCode | nVarchar(10) | Input | 98105-1234 |  |

### Results

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

## Stored Procedure Name: pDelClinics

Description: Deletes clinic data

### Parameters

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

### Results

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Type | Example | Notes |
| NA | Return Code | 100 | 1 = No error  -1 = General error |

## Stored Procedure Name: pInsPatients

Description: Inserts patient data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @PatientID | int | Output | 1 | Returns Inserted ID using @@Identity |
| @PatientFirstName | nVarchar(100) | Input | Evan |  |
| @PatientLastName | nVarchar(100) | Input | Leven |  |
| @PatientPhoneNumber | nVarchar(100) | Input | (206)126-8547 |  |
| @PatientAddress | nVarchar(100) | Input | 4520 21st Ave NE |  |
| @PatientCity | nVarchar(100) | Input | Seattle |  |
| @PatientState | nchar(2) | Input | WA |  |
| @PatientZipCode | nVarchar(10) | Input | 98105-1234 |  |

### 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: pUpdPatients

Description: Updates patient data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @PatientID | int | Input | 1 |  |
| @PatientFirstName | nVarchar(100) | Input | Bob |  |
| @PatientLastName | nVarchar(100) | Input | Rob |  |
| @PatientPhoneNumber | nVarchar(100) | Input | (206)126-8547 |  |
| @PatientAddress | nVarchar(100) | Input | 4520 21st Ave NE |  |
| @PatientCity | nVarchar(100) | Input | Seattle |  |
| @PatientState | nchar(2) | Input | WA |  |
| @PatientZipCode | nVarchar(10) | Input | 98105-1234 |  |

### Results

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

## Stored Procedure Name: pDelPatients

Description: Updates patient data

### Parameters

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

### Results

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Type | Example | Notes |
| NA | Return Code | 100 | 1 = No error  -1 = General error |

## Stored Procedure Name: pInsDoctors

Description: Inserts doctor data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @DoctorID | int | Output | 1 | Returns Inserted ID using @@Identity |
| @DoctorFirstName | nVarchar(100) | Input | Bob |  |
| @DoctorLastName | nVarchar(100) | Input | Rob |  |
| @DoctorPhoneNumber | nVarchar(100) | Input | (206)742-8396 |  |
| @DoctorAddress | nVarchar(100) | Input | 1233 Hope St. NE |  |
| @DoctorCity | nVarchar(100) | Input | Seattle |  |
| @DoctorState | nchar(2) | Input | WA |  |
| @DoctorZipCode | nVarchar(10) | Input | 98105-1234 |  |

### 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: pUpdDoctors

Description: Updates doctor data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @DoctorID | int | Input | 1 |  |
| @DoctorFirstName | nVarchar(100) | Input | Rob |  |
| @DoctorLastName | nVarchar(100) | Input | Lee |  |
| @DoctorPhoneNumber | nVarchar(100) | Input | (206)742-8396 |  |
| @DoctorAddress | nVarchar(100) | Input | 1233 Hope St. NE |  |
| @DoctorCity | nVarchar(100) | Input | Seattle |  |
| @DoctorState | nchar(2) | Input | WA |  |
| @DoctorZipCode | nVarchar(10) | Input | 98105-1234 |  |

### Results

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

## Stored Procedure Name: pDelDoctors

Description: Deletes doctor data

### Parameters

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

### Results

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Type | Example | Notes |
| NA | Return Code | 100 | 1 = No error  -1 = General error |

## 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 | 8/19/2018 12:30:00 PM |  |
| @AppointmentPatientID | int | Input | 1 |  |
| @AppointmentDoctorID | int | Input | 1 |  |
| @AppointmentClinicID | int | Input | 1 |  |

### 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: pUpdAppointments

Description: Updates appointment data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @AppointmentID | int | Input | 1 |  |
| @AppointmentDateTime | datetime | Input | 8/19/2018 12:30:00 PM |  |
| @AppointmentPatientID | int | Input | 1 |  |
| @AppointmentDoctorID | int | Input | 1 |  |
| @AppointmentClinicID | int | Input | 1 |  |

### Results

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

## Stored Procedure Name: pDelAppointments

Description: Deletes appointment data

### Parameters

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

### Results

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Type | Example | Notes |
| NA | Return Code | 100 | 1 = No error  -1 = General error |