# Patient Appointment Application Project

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Date: Mar 11th , 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 have views, stored procedures, and functions.
3. A working prototype should be available in a short period of time.
4. The application should be simple to keep development and maintenance costs at a minimum.

# Document History

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

## Change Log

|  |  |  |
| --- | --- | --- |
| Who | When | What |
| Huating Sun | 03/11/2021 | Created this document |

## Open Issues

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

## Closed Issues

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

# Solution Naming Conventions

## Database (OLTP)

|  |  |  |  |
| --- | --- | --- | --- |
| Object Type | Convention | Example | Description |
| Table | TableName | Doctors | A table to hold data |
| View | vViewName | vDoctors | A saved select statement that provides data |
| Stored Proc. | pProcedureName | pInsDoctors | A set of saved statements for data transactions |
| Primary Key Constraint | pkObjectName | pkDoctors | A constraint to do Primary Key functionality |
| Foreign Key Constraint | fkObjectNameObjectName | fkAppointmentDoctors | A constraint to do Foreign Key functionality |
| Check Constraint | checkObjectName | checkDoctorPhone | A constraint to do check certain values |
| Unique Constraint | uqObjectName | uqClinicName | A constraint to enforce Unique values |

# **OLTP Database Tables**

## Table Name: Patients

Description: A Table with Patients Data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Example | Notes |
| PatientID | int | 1 | PK, Identity (1,1) |
| PatientFirstName | nvarchar(100) | John | Not Null |
| PatientLastName | nvarcahr(100) | Benelli | Not Null |
| PatientPhoneNumber | nvarchar(100) | 206-468-5175 | Check Pattern ###-###-#### |
| PatientAddress | nvarchar(100) | 233 Main Street | Not Null |
| PatientCity | nvarchar(100) | Seattle | Not Null |
| PatientState | nchar(2) | WA | Not Null |
| PatientZipCode | nvarchar(10) | 98111 | Check Pattern ##### or #####-#### |

### 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: A Table with Doctors Data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Example | Notes |
| DoctorID | int | 1 | PK, Identity (1,1) |
| DoctorFirstName | nvarchar(100) | Ben | Not Null |
| DoctorLastName | nvarcahr(100) | Abraham | Not Null |
| DoctorPhoneNumber | nvarchar(100) | 203-076-8976 | Check Pattern ###-###-#### |
| DoctorAddress | nvarchar(100) | 525 Main Street | Not Null |
| DoctorCity | nvarchar(100) | Belleve | Not Null |
| DoctorState | nchar(2) | WA | Not Null |
| DoctorZipCode | nvarchar(10) | 98125 | Check Pattern ##### or #####-#### |

### 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: Clinics

Description: A Table with Clinics Data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Example | Notes |
| ClinicID | int | 1 | PK, Identity (1,1) |
| ClinicName | nvarcahr(100) | PhotoBug | Not Null |
| ClinicPhoneNumber | nvarchar(100) | 208-797-0653 | Check Pattern ###-###-#### |
| ClinicAddress | nvarchar(100) | 222 Main Street | Not Null |
| ClinicCity | nvarchar(100) | Seattle | Not Null |
| ClinicState | nchar(2) | WA | Not Null |
| ClinicZipCode | nvarchar(10) | 98124 | Check Pattern ##### or #####-#### |

### Constraints

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Column Name | Primary Key | Foreign Key | Not Null | Check | Unique | Default |
| ClinicID | Yes | No | Yes | No | Yes | Yes |
| ClinictName | No | No | Yes | No | No | 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: Appointments

Description: A Table with Appointments Data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Example | Notes |
| AppointmentID | int | 1 | PK, Identity (1,1) |
| AppointmentDateTime | dateTime | 2019/03/25 08:21:30.000 | Not Null |
| AppointmentPatientID | int | 1 | FK |
| AppointmentDoctorID | int | 1 | FK |
| AppointmentClinicID | int | 1 | FK |

### Constraints

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Column Name | Primary Key | Foreign Key | Not Null | Check | Unique | Default |
| AppintmentID | 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: vPatients

Description: View that selects patients data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| PatientID | Patients.PatientID | 1 |  |
| PatientFirstName | Patients.PatientFirstName | John |  |
| PatientLastName | Patients.PatientLastName | Benelli |  |
| PatientPhoneNumber | Patients.PatientPhoneNumber | 206-468-5175 |  |
| PatientAddress | Patients.PatientAddress | 233 Main Street |  |
| PatientCity | Patients.PatientCity | Seattle |  |
| PatientState | Patients.PatientState | WA |  |
| PatientZipCode | Patients.PatientZipCode | 98111 |  |

## View Name: vDoctors

Description: View that selects doctors data

### Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| DoctorID | Doctors.DoctorID | 1 |  |
| DoctorFirstName | Doctors.DoctorFirstName | Ben |  |
| DoctorLastName | Doctors.DoctorLastName | Abraham |  |
| DoctorPhoneNumber | Doctors.DoctorPhoneNumber | 203-076-8976 |  |
| DoctorAddress | Doctors.DoctorAddress | 525 Main Street |  |
| DoctorCity | Doctors.DoctorCity | Belleve |  |
| DoctorState | Doctors.DoctorState | WA |  |
| DoctorZipCode | Doctors.DoctorZipCode | 98125 |  |

## View Name: vClinics

Description: View that selects clinics data

Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| ClinicID | Clinics.ClinicID | 1 |  |
| ClinicName | Clinics.ClinicName | PhotoBug |  |
| ClinicPhoneNumber | Clinics.ClinicPhoneNumber | 208-797-0653 |  |
| ClinicAddress | Clinics.ClinicAddress | 222 Main Street |  |
| ClinicCity | Clinics.ClinicCity | Seattle |  |
| ClinicState | Clinics.ClinicState | WA |  |
| ClinicZipCode | Clinics.ClinicZipCode | 98124 |  |

## View Name: vAppointments

Description: View that selects appointments data

Columns

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Source | Example | Notes |
| AppointmentID | Appointments.AppointmentID | 1 |  |
| AppointmentDateTime | Appointments.AppointmentDateTime | 2019/03/25 08:21:30.000 |  |
| AppointmentPatientID | Appointments.AppointmentPatientID | 1 |  |
| AppointmentDoctorID | Appointments.AppointmentDoctorID | 1 |  |
| AppointmentCliniicID | Appointments.AppointmentClinicID | 1 |  |

# **OLTP Database Stored Procedures**

## Stored Procedure Name: pInsPatients

Description: Procedure that inserts patient data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @PatientID | int | Output | @PatientID | Returns Inserted ID using @@Identity |
| @PatientFirstName | nvarchar(100) | Input | John | Not Null |
| @PatientLastName | nvarchar(100) | Input | Benelli | Not Null |
| @PatientPhoneNumber | nvarchar(100) | Input | 206-468-5175 | Validated by checkPatientPhone |
| @PatientAddress | nvarchar(100) | Input | 233 Main Street | Not Null |
| @PatientCity | nvarchar(100) | Input | Seattle | Not Null |
| @PatientState | nchar(2) | Input | WA | Not Null |
| @PatientZipCode | nvarchar(10) | Input | 98111 | Validated by checkPatientZipCode |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | Return code | Return | 1 | 1 = No error  -1 = Error detected, failure |
| @PatientID | int | Output | 1 | Returns Inserted ID using @@Identity |

## Stored Procedure Name: pUpdPatients

Description: Procedure that updates patient data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @PatientID | int | Input | 1 | PK, exists in table |
| @PatientFirstName | nvarchar(100) | Input | John | Not Null |
| @PatientLastName | nvarchar(100) | Input | Benelli | Not Null |
| @PatientPhoneNumber | nvarchar(100) | Input | 206-468-5175 | Validated by checkPatientPhone |
| @PatientAddress | nvarchar(100) | Input | 233 Main Street | Not Null |
| @PatientCity | nvarchar(100) | Input | Seattle | Not Null |
| @PatientState | nchar(2) | Input | WA | Not Null |
| @PatientZipCode | nvarchar(10) | Input | 98111 | Validated by checkPatientZipCode |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | Return code | Return | 1 | 1 = No error  -1 = Error detected, failure |

## Stored Procedure Name: pDelPatients

Description: Procedure that deletes patient data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @PatientID | int | Input | @PatientID | PK, exists in table |

### Results

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Type | Example | Notes |
| NA | Return code | 1 | 1 = No error  -1 = Error detected, failure |

## Stored Procedure Name: pInsDoctors

Description: Procedure that inserts doctor data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @DoctorID | int | Output | @DoctorID | Returns Inserted ID using @@Identity |
| @DoctorFirstName | nvarchar(100) | Input | Ben | Not Null |
| @DoctorLastName | nvarchar(100) | Input | Abraham | Not Null |
| @DoctorPhoneNumber | nvarchar(100) | Input | 203-076-8976 | Validated by checkDoctorPhone |
| @DoctorAddress | nvarchar(100) | Input | 525 Main Street | Not Null |
| @DoctorCity | nvarchar(100) | Input | Belleve | Not Null |
| @DoctorState | nchar(2) | Input | WA | Not Null |
| @DoctorZipCode | nvarchar(10) | Input | 98125 | Validated by checkDoctorZipCode |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | Return code | Return | 1 | 1 = No error  -1 = Error detected, failure |
| @DoctorID | int | Output | 1 | Returns Inserted ID using @@Identity |

## Stored Procedure Name: pUpdDoctors

Description: Procedure that updates doctor data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @DoctorID | int | Input | 1 | PK, exists in table |
| @DoctorFirstName | nvarchar(100) | Input | Ben | Not Null |
| @DoctorLastName | nvarchar(100) | Input | Abraham | Not Null |
| @DoctorPhoneNumber | nvarchar(100) | Input | 203-076-8976 | Validated by checkDoctorPhone |
| @DoctorAddress | nvarchar(100) | Input | 525 Main Street | Not Null |
| @DoctorCity | nvarchar(100) | Input | Belleve | Not Null |
| @DoctorState | nchar(2) | Input | WA | Not Null |
| @DoctorZipCode | nvarchar(10) | Input | 98125 | Validated by checkDoctorZipCode |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | Return code | Return | 1 | 1 = No error  -1 = Error detected, failure |

## Stored Procedure Name: pDelDoctors

Description: Procedure that deletes doctor data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @DoctorID | Int | Input | @DoctorID | PK, exists in table |

### Results

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Type | Example | Notes |
| NA | Return code | 1 | 1 = No error  -1 = Error detected, failure |

## Stored Procedure Name: pInsClinics

Description: Procedure that inserts Clinic data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @ClinicID | int | Output | @ClinicID | Returns Inserted ID using @@Identity |
| @ClinicName | nvarchar(100) | Input | PhotoBug | Not Null |
| @ClinicPhoneNumber | nvarchar(100) | Input | 208-797-0653 | Validated by checkClinicPhone |
| @ClinicAddress | nvarchar(100) | Input | 222 Main Street | Not Null |
| @ClinicCity | nvarchar(100) | Input | Seattle | Not Null |
| @ClinicState | nchar(2) | Input | WA | Not Null |
| @ClinicZipCode | nvarchar(10) | Input | 98124 | Validated by checkClinicZipCode |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | Return code | Return | 1 | 1 = No error  -1 = Error detected, failure |
| @ClinicID | int | Output | 1 | Returns Inserted ID using @@Identity |

## Stored Procedure Name: pUpdClinics

Description: Procedure that updates Clinic data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @ClinicID | int | Input | 1 | PK, exists in table |
| @ClinicName | nvarchar(100) | Input | PhotoBug | Not Null |
| @ClinicPhoneNumber | nvarchar(100) | Input | 208-797-0653 | Validated by checkClinicPhone |
| @ClinicAddress | nvarchar(100) | Input | 222 Main Street | Not Null |
| @ClinicCity | nvarchar(100) | Input | Seattle | Not Null |
| @ClinicState | nchar(2) | Input | WA | Not Null |
| @ClinicZipCode | nvarchar(10) | Input | 98124 | Validated by checkClinicZipCode |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | Return code | Return | 1 | 1 = No error  -1 = Error detected, failure |

## Stored Procedure Name: pDelClinics

Description: Procedure that deletes Clinic data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @ClinicID | Int | Input | @ClinicID | PK, exists in table |

### Results

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Type | Example | Notes |
| NA | Return code | 1 | 1 = No error  -1 = Error detected, failure |

## Stored Procedure Name: pInsAppointments

Description: Procedure that inserts appointment data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @AppointmentID | int | Output | @AppintmentID | Returns Inserted ID using @@Identity |
| @AppointmentDateTime | dateTime | Input | 2019/03/25 08:21:30.000 | Not Null |
| @AppointmentPatientID | int | Input | 1 | Validated by fkAppointmentPatients |
| @AppointmentDoctorID | int | Input | 1 | Validated by fkAppointmentDoctors |
| @AppointmentClinicID | int | Input | 1 | Validated by fkAppointmentClinics |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | Return code | Return | 1 | 1 = No error  -1 = Error detected, failure |
| @AppointmentID | int | Output | 1 | Returns Inserted ID using @@Identity |

## Stored Procedure Name: pUpdAppointments

Description: Procedure that updates Appointment data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @AppointmentID | int | Input | 1 | PK, exists in table |
| @AppointmentDateTime | dateTime | Input | 2019/03/25 08:21:30.000 | Not Null |
| @AppointmentPatientID | int | Input | 1 | Validated by fkAppointmentPatients |
| @AppointmentDoctorID | int | Input | 1 | Validated by fkAppointmentDoctors |
| @AppointmentClinicID | int | Input | 1 | Validated by fkAppointmentClinics |

### Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column Name | Data Type | Type | Example | Notes |
| NA | Return code | Return | 1 | 1 = No error  -1 = Error detected, failure |

## Stored Procedure Name: pDelAppointments

Description: Procedure that deletes Appointment data

### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter Name | Data Type | Type | Example | Notes |
| @AppointmentID | Int | Input | @AppointmentID | PK, exists in table |

### Results

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Type | Example | Notes |
| NA | Return code | 1 | 1 = No error  -1 = Error detected, failure |