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# ***SCATS APPLICATION*** **DESIGN DOCUMENTATION**

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Version *1.0*  
*01/19/2020*

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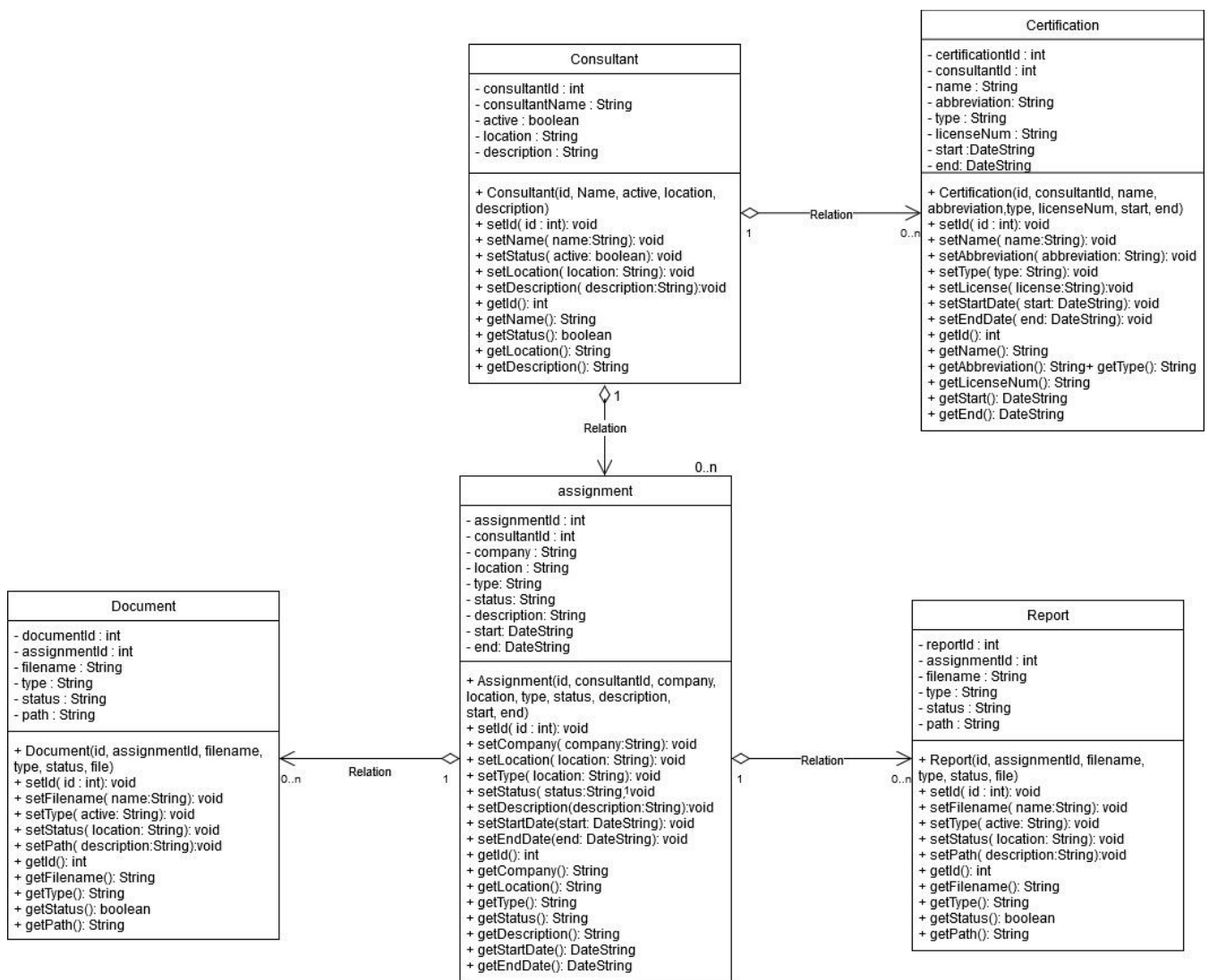
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## Class Architecture Diagram

The SCATS solution is based upon the management and interaction between five primary data classes; Consultant, Certification, Document, Assignment, and Report. The Consultant data model defines each individual consultant added to the SCATS system for management and tracking. Because consultants can only be assigned engagements if they're qualified and certified, the Certification data model will be used to outline each certification obtained by the consultant. Certifications data fields track the certification name, its type, license number, acquisition date, status, and expiration date.

An Assignment data model is used to define past, active, and future assignments that will be undertaken by qualified consultants. The Document data model will be used to define the necessary documentation records for an assignment, ensuring all legal and regulatory compliance needs are set prior to active engagement. Likewise, a Report data model will be used to define the reports generated as an assignments status transitions from "Active" to "Reporting".

## Object Data Model



## Object Data Model in Detail

### Consultant Data Model

| Consultant   |
|--|
| <ul style="list-style-type: none"><li>-IntegerProperty consultantId</li><li>-StringProperty consultantName</li><li>+boolean active</li><li>-StringProperty location</li><li>-StringProperty description</li><li>-Date startDate</li><li>-Date endDate</li><li>-StringProperty dateString</li><li>-StringProperty startString</li><li>-StringProperty endString</li><li>-StringProperty createdBy</li><li>-Blob profilepic</li></ul>  |
| <ul style="list-style-type: none"><li>+Consultant ()</li><li>+Consultant (int consultantId, String consultantName, String location, String description, Date startDate, Date endDate, String createdBy)</li><li>+Blob setProfilePic(Blob profilePic)</li><li>+int setConsultantId(int consultantId)</li><li>+String setConsultantName(String consultantName)</li><li>+String setLocation(String location)</li><li>+String setDescription(String description)</li><li>+Date setStartDate(Date startDate)</li><li>+Date setEndDate(Date endDate)</li><li>+String setCreatedBy(String createdBy)</li><li>+Blob getProfilePic()</li><li>+int getConsultantId()</li><li>+String getName()</li><li>+String getLocation()</li><li>+String getDescription()</li><li>+Date getStartDate()</li><li>+Date getEndDate()</li><li>+String getDateString()</li><li>+IntegerProperty getConsultantIdProperty()</li><li>+StringProperty getNameProperty()</li><li>+StringProperty getLocationProperty()</li><li>+StringProperty getDescriptionProperty()</li><li>+StringProperty getStartDateProperty()</li><li>+StringProperty getEndDateProperty()</li><li>+StringProperty getDateStringProperty()</li><li>+static LocalDate validateConsultant(String consultantName, String consultantLocation, LocalDate consultantHireDate)</li></ul> |

## Assignment/Engagement Data Model

| Engagement  |
|---|
| <ul style="list-style-type: none"> <li>-IntegerProperty assignmentId</li> <li>-IntegerProperty consultantId</li> <li>-StringProperty company</li> <li>-StringProperty location</li> <li>-StringProperty type</li> <li>-StringProperty status</li> <li>-StringProperty description</li> <li>-Timestamp startDate</li> <li>-Timestamp endDate</li> <li>-Date startDate</li> <li>-Date endDate</li> <li>-StringProperty dateString</li> <li>-StringProperty startString</li> <li>-StringProperty endString</li> <li>-StringProperty createdBy</li> <li>-StringProperty consultantName</li> <li>-StringProperty dateCreated</li> <li>-StringProperty active</li> </ul>  |
| <ul style="list-style-type: none"> <li>✦ Engagement()</li> <li>✦ Engagement(int assignmentId, int consultantId, String company, String location, String type, String status, String description, Date startDate, Date endDate, String createdBy)</li> <li>✦ void setActive()</li> <li>✦ void setInactiveActive()</li> <li>✦ String setDateCreated(String createdDate)</li> <li>✦ int setAssignmentId(int assignmentId)</li> <li>✦ int setConsultantId(int consultantId)</li> <li>✦ String setCompany(String company)</li> <li>✦ String setLocation(String location)</li> <li>✦ String setType(String type)</li> <li>✦ String setStatus(String status)</li> <li>✦ String setDescription(String description)</li> <li>✦ Date setStartDate(Date startDate)</li> <li>✦ Date setEndDate(Date endDate)</li> <li>✦ String setCreatedBy(String createdBy)</li> <li>✦ String getActive()</li> <li>✦ String getDateCreated()</li> <li>✦ int getAssignmentId()</li> <li>✦ int getConsultantId()</li> <li>✦ String getCompany()</li> <li>✦ String getLocation()</li> <li>✦ String getType()</li> <li>✦ String getStatus()</li> <li>✦ String getDescription()</li> <li>✦ Date getStartDate()</li> <li>✦ Date getEndDate()</li> <li>✦ String getDateString()</li> <li>✦ StringProperty getActiveProperty()</li> <li>✦ StringProperty getDateCreatedProperty()</li> <li>✦ IntegerProperty getAssignmentIdProperty()</li> <li>✦ IntegerProperty getConsultantIdProperty()</li> <li>✦ StringProperty getConsultantIdResolution()</li> <li>✦ StringProperty getCompanyProperty()</li> <li>✦ StringProperty getLocationProperty()</li> <li>✦ StringProperty getTypeProperty()</li> <li>✦ StringProperty getStatusProperty()</li> <li>✦ StringProperty getDescriptionProperty()</li> <li>✦ StringProperty getStartDateProperty()</li> <li>✦ StringProperty getEndDateProperty()</li> <li>✦ StringProperty getDateStringProperty()</li> <li>✦ static LocalDate validateEngagement(String engagementLocation, String engagementCompany, String engagementType, LocalDate startDate, LocalDate endDate)</li> </ul> |

## Certification Data Model

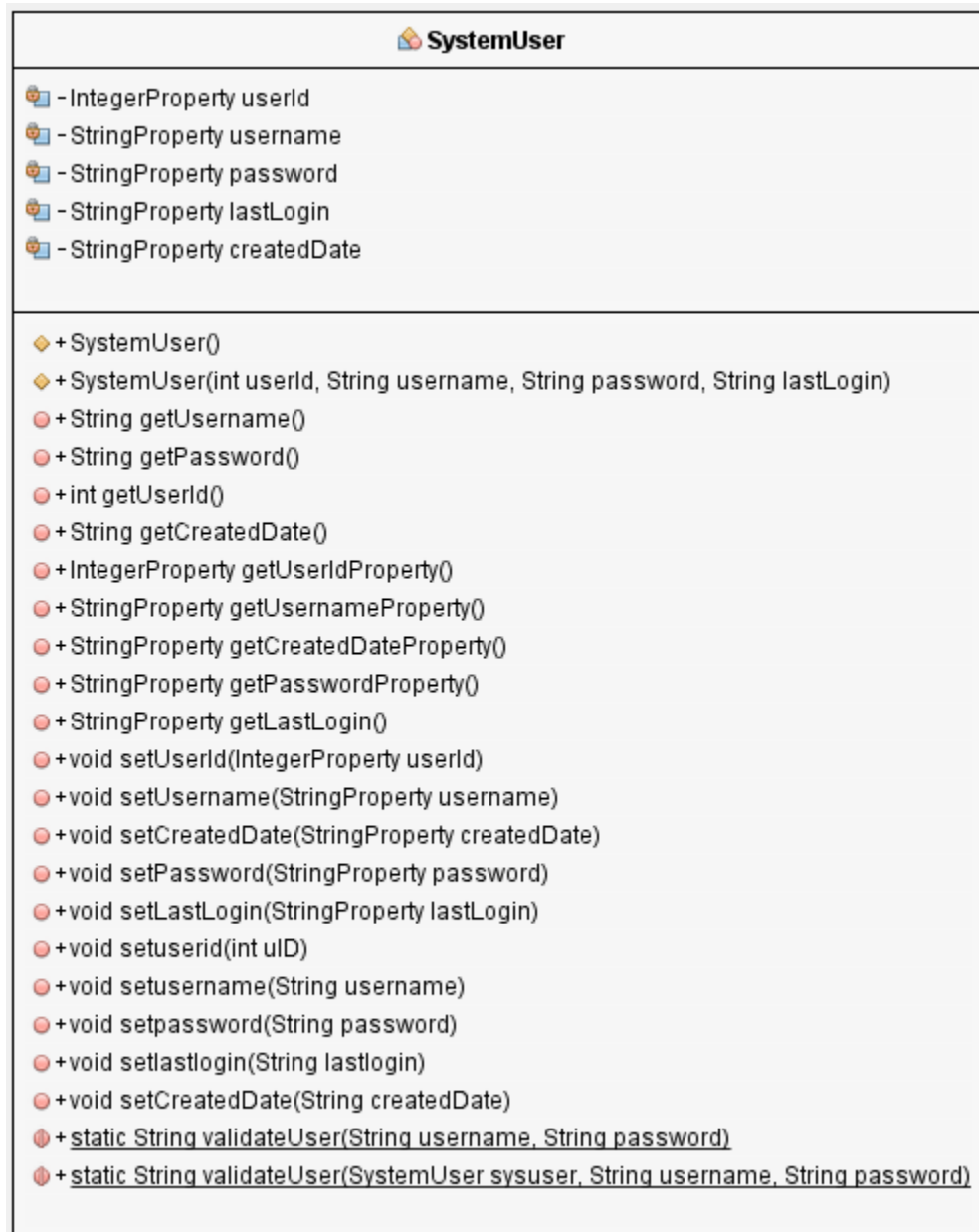
### Certification

- IntegerProperty certificationId
- IntegerProperty consultantId
- StringProperty name
- StringProperty abbreviation
- StringProperty type
- StringProperty licenseNumber
- StringProperty expiration
- Date startDate
- Date endDate
- StringProperty dateString
- StringProperty startString
- StringProperty endString
- StringProperty createdBy
- boolean active

- ◆ Certification ()
- ◆ Certification (int certificationId, int consultantId, String name, String abbreviation, String type, String licenseNumber, String expiration, Date startDate, Date endDate, String createdBy)
- String setExpiration(String expiration)
- int setCertificationId(int certificationId)
- int setConsultantId(int consultantId)
- String setName(String name)
- String setAbbreviation(String abbreviation)
- String setType(String type)
- String setLicenseNumber(String licenseNumber)
- Date setStartDate(Date startDate)
- Date setEndDate(Date endDate)
- String setCreatedBy(String createdBy)
- StringProperty getConsultantIdResolution()
- String getExpiration()
- int getCertificationId()
- int getConsultantId()
- String getName()
- String getAbbreviation()
- String getType()
- String getLicenseNumber()
- Date getStartDate()
- Date getEndDate()
- String getDateString()
- StringProperty getExpirationProperty()
- IntegerProperty getCertificationIdProperty()
- IntegerProperty getConsultantIdProperty()
- StringProperty getNameProperty()
- StringProperty getAbbreviationProperty()
- StringProperty getTypeProperty()
- StringProperty getLicenseNumberProperty()
- StringProperty getStartDateProperty()
- StringProperty getEndDateProperty()
- StringProperty getDateStringProperty()

## Document/Reports Data Model

| Report   | Document   |
|--|--|
| <ul style="list-style-type: none"> <li>-IntegerProperty reportId</li> <li>-IntegerProperty assignmentId</li> <li>-StringProperty type</li> <li>-StringProperty fileName</li> <li>-StringProperty checksum</li> <li>-StringProperty status</li> <li>-Date startDate</li> <li>-Date endDate</li> <li>-StringProperty dateString</li> <li>-StringProperty startString</li> <li>-StringProperty endString</li> <li>-StringProperty createdBy</li> <li>-boolean active</li> </ul>   | <ul style="list-style-type: none"> <li>-IntegerProperty documentId</li> <li>-IntegerProperty assignmentId</li> <li>-StringProperty type</li> <li>-StringProperty fileName</li> <li>-StringProperty checksum</li> <li>-StringProperty status</li> <li>-Date startDate</li> <li>-Date endDate</li> <li>-StringProperty dateString</li> <li>-StringProperty startString</li> <li>-StringProperty endString</li> <li>-StringProperty createdBy</li> <li>-boolean active</li> </ul>   |
| <ul style="list-style-type: none"> <li>+Report()</li> <li>+Report(int reportId, int assignmentId, String type, String fileName, String checksum, String status, Date startDate, Date endDate, String createdBy)</li> <li>+int setReportId(int reportId)</li> <li>+int setAssignmentId(int assignmentId)</li> <li>+String setType(String type)</li> <li>+String setFileName(String fileName)</li> <li>+String setChecksum(String checksum)</li> <li>+String setStatus(String status)</li> <li>+Date setStartDate(Date startDate)</li> <li>+Date setEndDate(Date endDate)</li> <li>+String setCreatedBy(String createdBy)</li> <li>+int getReportId()</li> <li>+int getAssignmentId()</li> <li>+String getType()</li> <li>+String getFileName()</li> <li>+String getChecksum()</li> <li>+String getStatus()</li> <li>+Date getStartDate()</li> <li>+Date getEndDate()</li> <li>+String getDateString()</li> <li>+IntegerProperty getReportIdProperty()</li> <li>+IntegerProperty getAssignmentIdProperty()</li> <li>+StringProperty getTypeProperty()</li> <li>+StringProperty getFileNameProperty()</li> <li>+StringProperty getChecksumProperty()</li> <li>+StringProperty getStatusProperty()</li> <li>+StringProperty getStartDateProperty()</li> <li>+StringProperty getEndDateProperty()</li> <li>+StringProperty getDateStringProperty()</li> <li>+static LocalDate validateReport(String selectedFileName, String documentType, String documentStatus, LocalDate publicationDate)</li> </ul> | <ul style="list-style-type: none"> <li>+Document()</li> <li>+Document(int documentId, int assignmentId, String type, String fileName, String checksum, String status, Date startDate, Date endDate, String createdBy)</li> <li>+int setDocumentId(int documentId)</li> <li>+int setAssignmentId(int assignmentId)</li> <li>+String setType(String type)</li> <li>+String setFileName(String fileName)</li> <li>+String setChecksum(String checksum)</li> <li>+String setStatus(String status)</li> <li>+Date setStartDate(Date startDate)</li> <li>+Date setEndDate(Date endDate)</li> <li>+String setCreatedBy(String createdBy)</li> <li>+int getDocumentId()</li> <li>+int getAssignmentId()</li> <li>+String getType()</li> <li>+String getFileName()</li> <li>+String getChecksum()</li> <li>+String getStatus()</li> <li>+Date getStartDate()</li> <li>+Date getEndDate()</li> <li>+String getDateString()</li> <li>+IntegerProperty getDocumentIdProperty()</li> <li>+IntegerProperty getAssignmentIdProperty()</li> <li>+StringProperty getTypeProperty()</li> <li>+StringProperty getFileNameProperty()</li> <li>+StringProperty getChecksumProperty()</li> <li>+StringProperty getStatusProperty()</li> <li>+StringProperty getStartDateProperty()</li> <li>+StringProperty getEndDateProperty()</li> <li>+StringProperty getDateStringProperty()</li> <li>+static LocalDate validateDocument(String selectedFileName, String documentType, String documentStatus, LocalDate publicationDate)</li> </ul> |

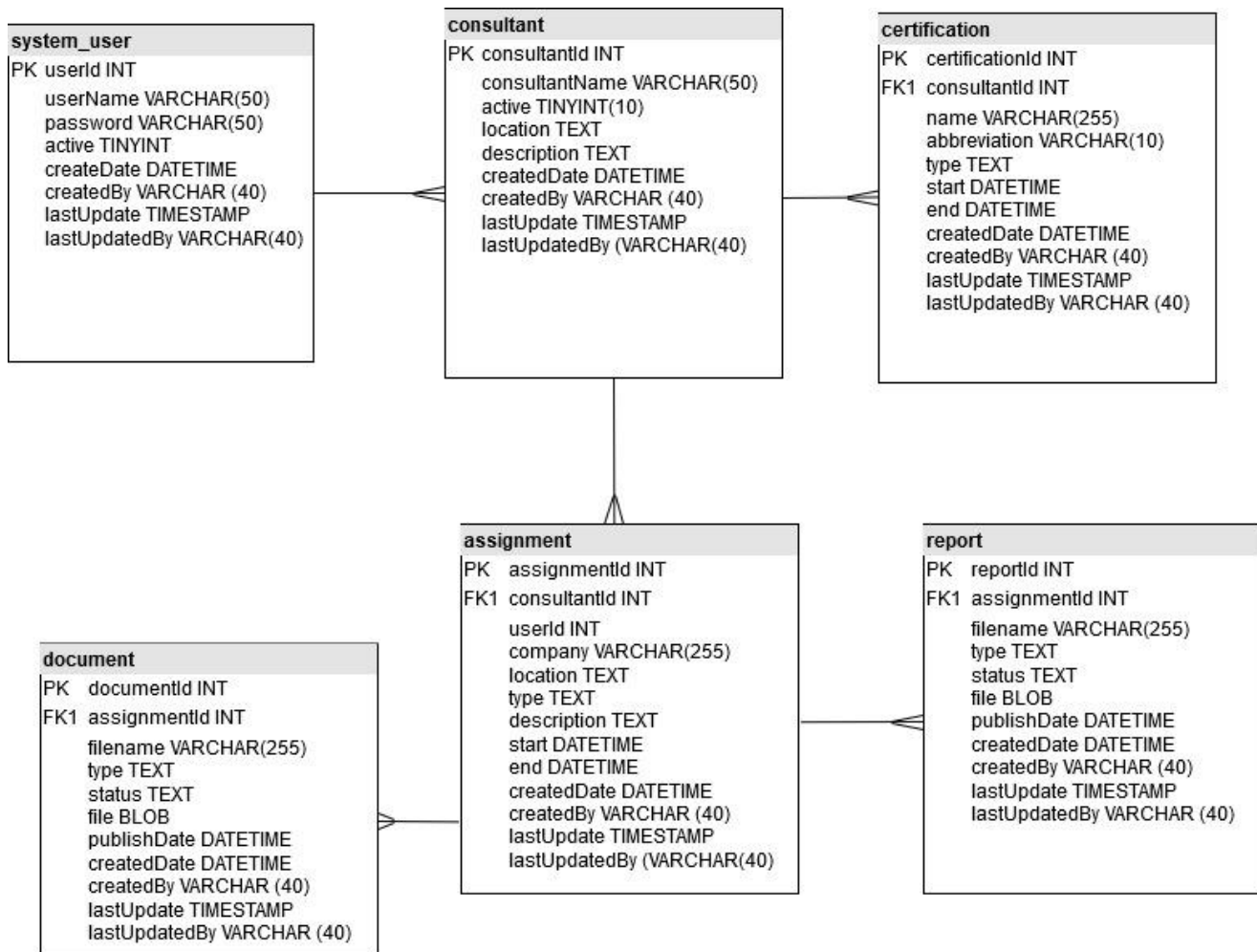




## Data Design Diagrams

### Database Design

The backend SQL database consists of five data tables detailing the data descriptions of a system users, managed consultants and their certifications; assignments, pre-assignment documents, and reports generated upon completion. The “system\_user” table will serve to manage users authorized to access the application and database. The “consultant” table will have a many-to-one relationship with the “system\_user” table and serve to manage consultants to be tracked and managed. Certifications of consultants will be recorded and tracked within the “certification” table, ensuring all consultants have valid, active, and industry approved security certifications. When consultants are put on assignment, the “assignment” table will be used to maintain assignment/engagement records along with the “document” table, used to store documents associated with the assignment. Finally, the report table, with a many-to-one relationship with the assignment table, will be used to store reports generated upon the completion of an assignment.



## Database Management Class



```
-final String db
-final String url
-final String connURL
-final String driver
-final String user
-final String pass
-static String activeUser
-static int openCount

-static void setActiveUser(String userName)
+static int validateUser(String username)
+static void sqlUpdateUserTimestamp(int UID)
+static boolean validatePass(int UID, String password)
+static void sqlNewSystemUser(String username, String password)
+static void sqlUpdateUser(int userId, String username, String password)
+static void refreshSystemUsers()
+static boolean sqlDeleteSystemUser(SystemUser systemUser)
+static String lookupUID(int CID)
+static void sqlNewConsultant(String consultantName, String location, String description, LocalDate startDate)
+static void sqlUpdateConsultant(int consultantId, String consultantName, String location, String description, LocalDate startDate)
+static void sqlUpdateConsultantProfilePic(int consultantId, String profilePic)
+static void refreshConsultants()
+static void sqlNewEngagement(int consultantId, String location, String company, String type, String status, String description, LocalDate startDate, LocalDate endDate)
+static void sqlUpdateEngagement(int engagementId, int consultantId, String location, String company, String type, String status, String description, LocalDate startDate, LocalDate endDate)
+static void refreshEngagements()
+static void refreshAllEngagements()
+static boolean deleteEngagement(Engagement engagement)
+static boolean sqlDeactivateEngagement(int engagementId)
+static boolean sqlReactivateEngagement(int engagementId)
+static void sqlNewCertification(int consultantId, String cCertName, String cAbbreviation, String cType, String cLicense, LocalDate startDate, String cExpiration)
+static void refreshCertifications()
+static void sqlUpdateCertification(int certificationId, String cCertName, String cAbbreviation, String cType, String cLicense, LocalDate startDate, String eExpiration)
+static boolean deleteCertification(Certification certification)
+static void sqlNewDocument(int assignmentId, String fileName, String type, String status, String checksum, LocalDate publishDate)
+static void refreshDocuments()
+static boolean deleteDocument(Document document)
+static void sqlNewReport(int assignmentId, String fileName, String type, String status, String checksum, LocalDate publishDate)
+static void refreshReports()
+static boolean deleteReport(Report report)
```

## Visual Design Diagrams

### Visual Mockup

The main screen of the SCATS application will provide the user with a graphical representation of the current month's engagement/assignment schedule. Active assignments/engagements will span the scheduled length of time on the calendar and provide additional detail of the engagement upon a mouse click event.

The screenshot shows the main interface of the SCATS application. At the top is a menu bar with 'File', 'Edit', 'Engagements', 'Reports', 'Help', and '<et al.>'. Below the menu is a calendar for 'January 2020'. The calendar grid shows days from Sunday to Saturday. Two engagement bars are visible: an orange bar labeled '<Consultant> Engagement' spanning from Monday, January 13th to Friday, January 17th, and a yellow bar labeled '<Consultant> Engagement' spanning from Thursday, January 30th to Friday, January 31st. Below the calendar is a 'Notes' section. At the bottom of the window are three buttons, each labeled '< Existing Consultants>'. Navigation arrows are located in the top right corner of the calendar area.

When clicked upon, a popup window will appear that will show the consultant assigned to the engagement, the type of engagement (Network, Web, Redteam, Social Engineering, Development, etc.), the location, the duration, associated documentation (Rules of Engagement (RoE), Statement of Work (SoW), etc.) and the hours of approved active operation.

The popup window displays the following information:

- Consultant Assigned:** Brent Chambers
- Location:** Vancouver, British Columbia
- Company/Firm:** Cygiene Solutions, LLC
- Engagement Type:** Network Penetration Test
- Assignment Duration:** 1/13/2020 – 1/17/2020
- Description:** Internal PCI Assessment, Approx 500 Hosts
- Associated Documentation:**

| Filename                          | Date      |
|-----------------------------------|-----------|
| CygieneSolutions_SOP_Final.docx   | 1/03/2020 |
| CygieneSolutions_ROE_Final.docx   | 1/03/2020 |
| CygieneSolutions_Arch_Diagram.pdf | 1/04/2020 |

At the bottom of the popup are 'Exit' and 'Save' buttons.