GC02 Team 7 Project Report
MINAP Mobile Application

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1 Background

1.1 MINAP/NICOR

The Myocardial Ischaemia National Audit Project (MINAP) investigates the management of heart attacks. Participating hospitals and ambulance services are provided with a record of their quality of management. These records are then compared to national and international clinical standards. The National Institute of Cardiovascular Outcomes Research (NICOR) is a partnership of clinicians, IT experts, analysts, academics and managers. Its mission is to "provide information to improve heart disease patients' quality of care and outcomes". Using different audits, MINAP being one of them, NICOR aims to provide the NHS, government and regulatory bodies real world data to be used in patient care [1][2].

1.2 Web Application

Participating hospitals are requested to enter all patients with suspected heart attack into MINAP's central database system. Data are collected by nurses and other clinical audit staff and entered in a dedicated web application. This web application collects all patient data, from demographics to diagnosis and release information. As it stands, the web application contains a 130 field dataset that is updated every two years (latest revision, June 2013); it is currently only available to the web browser Internet Explorer versions 9 or below. The data is then validated against a set of rules which include, but are not limited to, value range checks, date range checks, data type checks and encryption rules. Once completed, records are stored on MINAP's Domino server[3].

1.3 Client

The project's primary point of contact is Lucia Gavalova, Project Manager for the MINAP project, who we will refer to as the 'client' throughout this document (unless stated otherwise). Sue Manuel, MINAP's web app developer has also been a key stakeholder throughout the course of this project.

[1] MINAP Reports

[2] NICOR Website

[3] IBM Domino is used for enterprise collaboration, and is used primarily for its Lotus Notes capabilities in this instance

2 Requirements

The following requirements have been formulated from a series of client meetings and e-mail communication, available in brief under Client Communication.

2.1 Overview

Patient data record creation is currently restricted to when the nurses and other clinical audit staff are sitting in front of a computer. This would often be quite some time after a patient has been identified as being eligible for being entered into the MINAP dataset. A reduced-function mobile solution of the current web app was proposed by our client as a means of starting a patient record in MINAP's data set, allowing for prospective data collection. Completion of the record is expected to be done later on using the web app (using a full sized keyboard and screen).

2.2 Use Cases

The system's use case we are concerned with for our app can be modelled by the following table. Although the user-facing view of the system is fairly simple, most of the application logic lies in the interdependency and validation checks of the values entered by the user.

A nurse or clinical audit staff wants to create a record
She first needs to login to the server with her credentials
She then selects an option to create a new record
She then is brought to a page to enter in her initial diagnosis
If she doesn't understand a field, she can click on a button for help
She then enters the patient details into a data input field
If the data entered is invalid, a pop-up will appear, prompting her for correction
She can then navigate through each page using 'next' buttons, or through a navigation map
Throughout this process, she will save the data to the server by clicking a save button
Once complete, she logs out of the system

2.3 Functional Requirements

2.3.1 User Authentication and Security

As with the web application, the user must login to the central server prior to using the mobile app for data input. For security purposes, the user authentication details should not be held on the device beyond the initial authentication phase (or instead, use tokens), and all sensitive data retrieved from the server and created on the device should be destroyed at the end of a user session.

2.3.2 Data Collection

In order to create a patient record, the app needs to provide the user with forms for data entry. Depending on the data fields, certain format restrictions are imposed, for example: date and time related fields are in the dd/mm/yy hh:mm format; combo boxes; and numeric only data fields. Data fields should be divided into sections (pages) based on the current web app structure for familiarity. Data entered in by the user should be stored locally for the duration of the session, and ideally sent to a server once validated[4].

2.3.3 Data Validation

Validation currently occurs on the web app automatically at the point of exiting a data input object, page, or on saving. All 130 fields within the dataset must pass at least one validation rule. Certain fields will then either trigger additional validation rules involving other fields, default values to other fields, and/or open new sections of data collection to be filled out. Our app should follow this behaviour (with a subset of data) to ensure data integrity.

2.3.4 Data Submission

Once all mandatory data is entered and all validations rules have been passed, the user will be able to store the local record to a SQLite database. Due to time constraints, the team was unable to test calls to a web service of our own design as agreed with the client (20/11/13 Meeting). However, the SQLite database should prove to be flexible if used in future implementations as it is self-contained and follows the dataset's specifications.

[4]See Data Submission

2.3.5 Mobile Usability

Since the app will be running on smart phones (our target platform), factors such as the screen size, touch navigation, and use of an on-screen keyboard have to be taken into account during the user interface design phase. Certain features in the current web app (e.g. navigation and data submission) are not intuitive and need to be rethought for mobile use, but should still retain the familiarity of the existing interface.

2.4 Architectural Requirements

The core purpose of our mobile application is to provide proof of concept for a solution what would offer a starting point for record creation. To that end, we came to a mutual agreement with the client that the original dataset be reduced from 130 fields. In exchange for reducing the volume of data, certain architectural requirements were requested so as to create a framework for future work to build upon (e.g. porting the application to other platforms).

2.4.1 Web Services

Although we have reached an agreement that we will not actually need to touch the live Domino Server, there are certain functions that our application will have to implement to ensure future compatibility with MINAP's technology stack (IBM Lotus Notes on Domino Server 8.5.3). Processes such as how data will be retrieved from the server and authentication processes should be modelled into the system as stubs that can be easily implemented at a later stage in the development of the app. Further research into the topic of communication with the server from other services was also deemed useful, since the client was unable to give a clear answer as to how this could be done.

3 Target Mobile Platform

THIS SECTION IS TO BE REWRITTEN

Our client has been unsure about the preferred target platform of the audience of our mobile app. To help better inform this decision, we have designed a user device survey which the client has agreed to running over the period of a few months, with a suggested completion date within 3 weeks of rolling out. The primary purpose of pushing out this survey is to better inform decisions of what secondary platforms should be supported to increase mobile app uptake by hospital staff. Despite this, due to the short time-frame imposed on us by GC01, we have mutually agreed to target Android mobile phones as the primary platform. More details regarding the device survey can be found in the Appendix.

THIS SECTION IS TO BE REWRITTEN

4 User Interface

As part of ensuring our understanding of the requirements were in line with the client's expectations, we sketched out a preliminary user interface (UI) and presented our ideas to our client. The order in which each page was presented is indicated by red arrows. A summary of the key points relating to UI during our conversation are included below.

4.1 Initial User Interface Feedback

Client response:

- happy with proposal of similar design to web app
- current (web app) record search criteria is non-specifiable (simple text match); this behaviour is sufficient for the mobile app
- request for an application tutorial for "non-techie" users
- navigation menu: a simplified version of the map could be used for mobile
- an 'auto-save' feature would be useful ("like Microsoft Word") in case of battery loss, device breakage, or more pressing matters to attend to (i.e. emergency)

4.1.1 Commentary and Response

We have accepted the feedback from the client as being in line with our initial requirements. However, the request for an auto-save feature in the app would violate the privacy requirements of having volatile local data. A way to mitigate this would be to save the record to a 'draft' database when auto-saving (i.e. "submitting" a record without performing validation-on-send), but is a low-priority feature at this point.

4.1.2 UI Tweaking

After taking these comments on board, we have more formally modelled the user's flow of use through the app, mapping each UI element to Java's graphical implementation classes. It is worth noting that the UI is still in its initial stages, pending further adaptation for mobile use.

5 Software Design

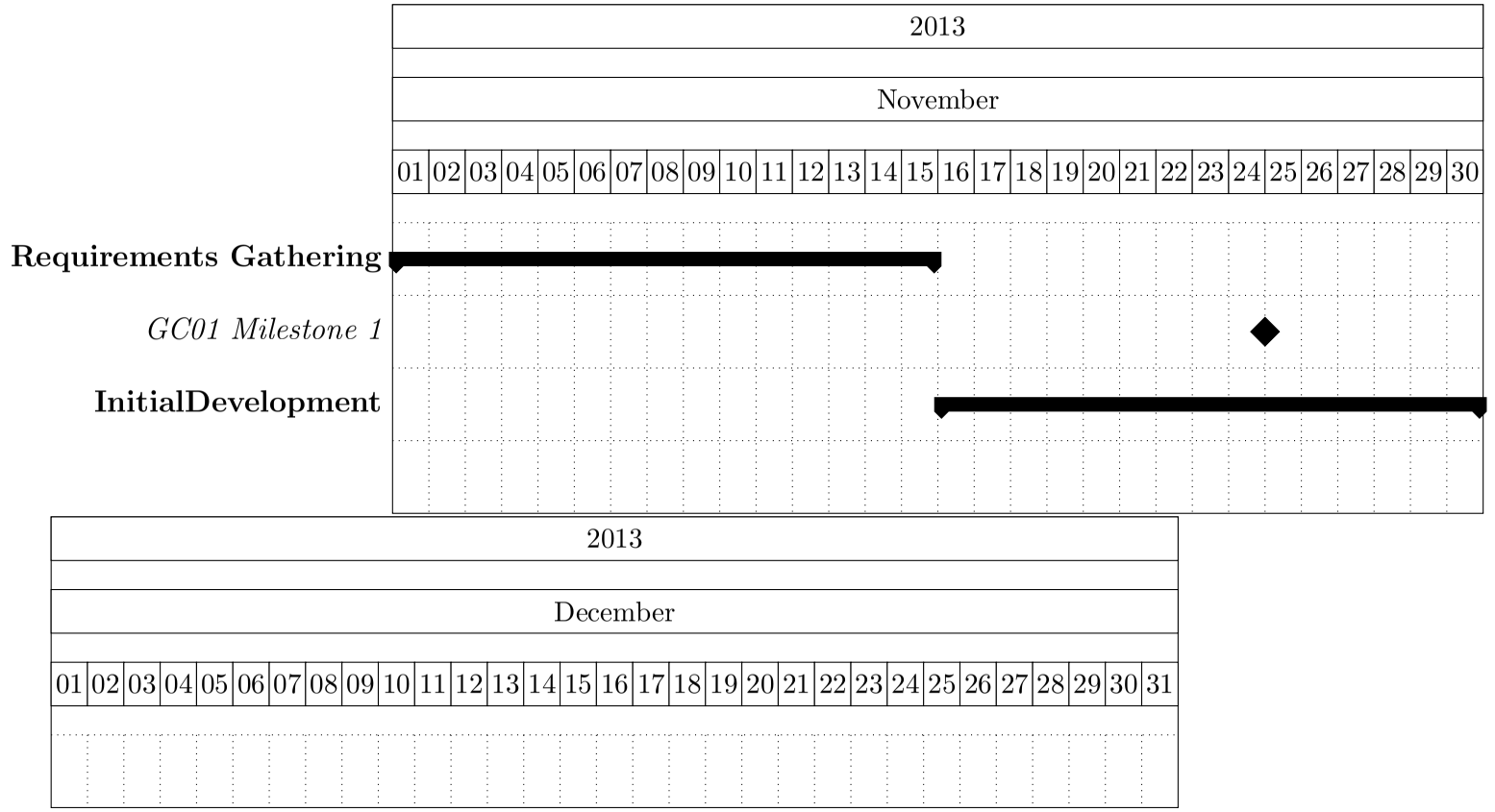
5.1 Class Diagrams

5.2 Data Dictionary

6 Project Management

6.0.1 Work Packages

6.0.2 Gantt Chart



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01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	

7 Teamwork

7.1 Team Roles

Team roles were assigned based on the recommended list provided in the GC01 document requirements.

Name	Primary Role	Secondary Role
Marco **David** Corrales	Secondary Team Lead	Primary Developer Background Researcher UI Designer
Amer **Kamil** Zainal	Primary Team Lead	Technology Researcher Software Tester Systems Designer & Analyst Documentation Lead
Ke Wei	Client Main Contact	Secondary Developer Data Designer Device & Deployment Tester

7.2 Teamwork Commentary

7.2.1 Team Workflow

Trello[5] has been used extensively by the team for information organisation. Agendas for the next meeting are decided at the end of each meeting, with unfinished items of the day deferred; ensuring that each agenda is a summary of what was achieved at each meeting. To supplement this, any details (e.g. comments, photos, resources) related to the meeting are included in a separate section with a corresponding date.

To further consolidate our memory of team progress, our primary developer has been updating a blog (http://akz08.github.io/minap-mobile/) summarising our meeting outcomes. Due to the public nature of blogs, we have ensured to omit any client identifying information to avoid any potential privacy problems. The blog should however be understandable upon reading the entirety of this report.

For code sharing, we currently use a private GitHub repository which is worked on by all members of the team. GitHub's repository wiki functionality is used for collaboration of more long-form documentation (e.g. writing this report) and structured ordering of resources.

To avoid having to check both services frequently, we also use FlowDock to easily track changes on both GitHub and Trello.

[5]Information disclosed on Trello are private to the team

7.2.2 Task Assignment

Team members typically select the work packages outlined at the end of each meeting, but assignment of tasks tend to gravitate towards the team roles previously tabulated.

7.2.3 Meetings

The team typically meets every workday to complete work together. Some team members pick up work to be done on their own time to help meeting productivity.

A Data Dictionary

A.1 Patient Class

AdminStatus	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.DemographicsAdmission	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- adminStatus : Byte	Holds the short code for patient's admission status
- statusLongCode : String	Holds the long code associated with adminStatus
+ <<constructor>> AdminStatus()	Sets the appropriate superclass values
+ setAdminStatus(admStatus : Byte) : Boolean	Returns true if parameter passes validation rules
+ getAdminStatus() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with adminStatus variable

AdmissionAfterNSTEMI	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.InitialDiagnosis	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- admissionAfterSTEMI : Boolean = false	Holds a boolean value, reveals items on UI
+ <<constructor>> AdmissionAfterNSTEMI()	Sets the appropriate superclass values
+ setAdmissionAfterSTEMI(admASTEMI : Boolean) : Boolean	Sets, then returns admissionAfterSTEMI
+ getAdmissionAfterSTEMI() : String	Returns a String value of admissionAfterSTEMI

AdmissionDate	<<**extends Value**>>
˜com.ucl.appteam7.minapmobile.model.values.PatientInfo	
<<import:>> com.ucl.appteam7.minapmobile.model.Value;	
<<import:>> java.text.ParseException;	
<<import:>> java.text.SimpleDateFormat;	
<<import:>> java.util.Date;	
- adminDate : String	Holds Date String, formatted as needed
- adminTime : String	Holds Time String, formatted as needed
- adminDateTime : String	Combines both previous variables
- now : Date = new Date()	Holds the current date, used for validation
sd : SimpleDateFormat = new SimpleDateFormat("dd/mm/yyyy")	Holds the String format desired for adminDate
st : SimpleDateFormat = new SimpleDateFormat("HH:mm")	Holds the String format desired for adminTime
sdt : SimpleDateFormat = new SimpleDateFormat("dd/mm/yyy HH:mm")	Holds the String format for adminDateTime
+ <<constructor>> AdmissionDate()	Sets the appropriate superclass values
+ setDateTime() : Boolean	Checks date and time validation, returns true if passed
+ setADate(aDate : Date) : Boolean	Checks the passed Date against date validation rules, returns true if passed
+ setATime(aTime : Date) : Boolean	Checks the passed Date against time validation rules, returns true if passed
+ getDateTime() : String	Returns adminDateTime variable
+ getADate() : String	Returns adminDate variable
+ getATime() : String	Returns adminTime variable

AdmissionMethod	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.DemographicsAdmission	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- admissionMethod : Byte	Holds the short code for patient's admission method
- admissionLongCode : String	Holds the long code associated with admissionMethod
+ <<constructor>> AdmissionMethod()	Sets the appropriate superclass values
+ setAdmissionMethod(admMethod : Byte) : Boolean	Returns true if parameter passes validation rules
+ getAdmissionMethod() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with admissionMethod variable

AdmissionWard	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.DemographicsAdmission	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- admissionWard : Byte	Holds the short code for patient's admission ward
- wardLongCode : String	Holds the long code associated with admissionWard
+ <<constructor>> AdmissionWard()	Sets the appropriate superclass values
+ setAdmissionWard(admWard : Byte) : Boolean	Returns true if parameter passes validation rules
+ getAdmissionWard() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with admissionWard variable

AdmittingConsultant	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.DemographicsAdmission	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- admittingConsultant : Byte	Holds the short code for patient's admitting consultant
- consulLongCode : String	Holds the long code associated with admittingConsultant
+ <<constructor>> AdmittingConsultant()	Sets the appropriate superclass values
+ setAdmittingConsultant(admConsul : Byte) : Boolean	Returns true if parameter passes validation rules
+ getAdmittingConsultant() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with admittingConsultant variable

AngioDate	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.Angiography	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
<<import>> java.text.ParseException	
<<import>> java.text.SimpleDateFormat	
<<import>> java.util.Date	
sd : SimpleDateFormat = new SimpleDateFormat("dd/mm/yyyy")	Holds the String format desired for angioDate
st : SimpleDateFormat = new SimpleDateFormat("HH:mm")	Holds the String format desired for angioTime
sdt : SimpleDateFormat = new SimpleDateFormat("dd/mm/yyyy HH:mm")	Holds the String format desired for angioDateTime
- angioDate : String	Holds the patient's angiography date
- angioTime : String	Holds the patient's angiography time
- angioDateTime : String	Holds the patient's angiography date and time
- *DATE_FORMAT* : String = "01/01/2000"	Lower bound for date range check
- now : Date = new Date()	Holds current Date, used for range check
+ <<constructor>> AngioDate()	Set the appropriate superclass values
+ setDateTime() : Boolean	Returns true if both dates passed validation
+ setangioralDate(rDate : Date) : Boolean	Returns true if Date parameter passes validation
+ setangioralTime(rTime : Date) : Boolean	Returns true if Time parameter passes validation
+ getDateTime() : String	Returns angioDateTime variable
+ getAngioDate() : String	Returns angioDate variable
+ getAngioTime() : String	Returns angioTime variable

AngioDelay	**<<extends Value>>**
~com.ucl.appteam7.minapmobile.model.values.Angiography	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- angioDelay : Byte	Holds the short code for patient's angiography delay
- angioDelayLongCode : String	Holds the long code associated with angioDelay
+ <<constructor>> AngioDelay()	Sets the appropriate superclass values
+ setAngioDelay(aDelay : Byte) : Boolean	Returns true if parameter passes validation rules
+ getAngioDelay() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with angioDelay variable

AsthmaOrCOPD	**<<extends Value>>**
~com.ucl.appteam7.minapmobile.model.values.MedicalHistory	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- asthmaCOPD : Byte	Holds the short code for patient's cerebrovascular disease status
- asthmaCOPDLongCode : String	Holds the long code associated with asthmaCOPD
+ <<constructor>> AsthmaOrCOPD()	Sets the appropriate superclass values
+ setAsthmaCOPD(cDisease : Byte) : Boolean	Returns true if parameter passes validation rules
+ getAsthmaCOPD() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with asthmaCOPD variable

BMI	**<<extends Value>>**
~com.ucl.appteam7.minapmobile.model.values.Examinations	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- bmi : Double	Holds the patient's BMI
+ <<constructor>> BMI()	Set the appropriate superclass values
+ setBMI(height : Double, weight : Double) : Boolean	Calculates BMI, returns true if parameter passes validation
+ getBMI() : String	Returns bmi as a formatted String

CerebrovascularDisease	**<<extends Value>>**
~com.ucl.appteam7.minapmobile.model.values.MedicalHistory	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- cerebrovascularDisease : Byte	Holds the short code for patient's cerebrovascular disease status
- cerebrovascularDiseaseLongCode : String	Holds the long code associated with cerebrovascularDisease
+ <<constructor>> CerebrovascularDisease()	Sets the appropriate superclass values
+ setCerebrovascular(cDisease : Byte) : Boolean	Returns true if parameter passes validation rules
+ getCerebrovascular() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with cerebrovascularDisease variable

ChronicRenalFailure	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.MedicalHistory	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- chronicRenalFailure : Byte	Holds the short code for patient's chronic renal failure status
- chronicRenalFailureLongCode : String	Holds the long code associated with chronicRenalFailure
+ <<constructor>> ChronicRenalFailure()	Sets the appropriate superclass values
+ setRenalFailure(cRenalFailure : Byte) : Boolean	Returns true if parameter passes validation rules
+ getRenalFailure() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with chronicRenalFailure variable

CoronaryAngiography	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.Angiography	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- coronaryAngiography : Byte	Holds the short code for patient's coronary angiography
- coronaryAngiographyLongCode : String	Holds the long code associated with coronaryAngiography
+ <<constructor>> CoronaryAngiography()	Sets the appropriate superclass values
+ setCoronaryAngiography(cAngiography : Byte) : Boolean	Returns true if parameter passes validation rules
+ getCoronaryAngiography() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with coronaryAngiography variable

CoronaryIntervention	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.Angiography	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- coronaryIntervention : Byte	Holds the short code for patient's coronary intervention
- coronaryInterventionLongCode : String	Holds the long code associated with coronaryIntervention
+ <<constructor>> CoronaryIntervention()	Sets the appropriate superclass values
+ setCoronaryIntervention(cIntervention : Byte) : Boolean	Returns true if parameter passes validation rules
+ getCoronaryIntervention() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with coronaryIntervention variable

DaycaseTransferDate	<<**extends Value**>>
˜com.ucl.appteam7.minapmobile.model.values.Angiography	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
<<import>> java.text.ParseException	
<<import>> java.text.SimpleDateFormat	
<<import>> java.util.Date	
sd : SimpleDateFormat = new SimpleDateFormat(”dd/mm/yyyy”)	Holds the String format desired for daycaseDate
- daycaseDate : String	Holds the patient’s daycase transfer date
- *DATE_FORMAT* : String = ”01/01/2000”	Lower bound for date range check
- now : String = sd.format(new Date())	Holds current Date as a String, used for range check
+ <<constructor>> DaycaseTransferDate()	Set the appropriate superclass values
+ setDaycaseDate(iDate: Date) : Boolean	Returns true if parameter passes validation
+ getDaycaseDate() : String	Returns daycaseDate variable

DBAdapter	**Holds all SQLite logic**
˜com.ucl.appteam7.minapmobile.model	
<<import>> java.util.Collections	
<<import>> java.util.Date	
<<import>> java.util.List	
<<import>> java.util.ArrayList	
<<import>> android.content.ContentValues	
<<import>> android.content.Context	
<<import>> android.database.Cursor	
<<import>> android.database.SQLException	
<<import>> android.database.sqlite.SQLiteOpenHelper	
<<import>> android.database.sqlite.SQLiteDatabase	
<<import>> android.util.Log	
+ $\underline{HOSPITAL\_IDENTIFIER}$: String = "HospitalID"	Declares HospitalID as a column for a database's table
+ $\underline{RECORD\_NO}$: String = "RecordNum"	Declares RecordNum
+ $\underline{NHS\_NUMBER}$: String = "NHSNumber"	Declares NHSNumber
+ $\underline{PATIENT\_SURNAME}$: String = "PatientSurname"	Declares PatientSurname
+ $\underline{PATIENT\_FORENAME}$: String = "PatientForename"	Declares PatientForename
+ $\underline{PATIENT\_DOB}$: String = "PatientDOB"	Declares PatientDOB
+ $\underline{ADMISSION\_DATE}$: String = "AdminDate"	Declares AdminDate
+ $\underline{PATIENT\_INFO}$: String[] = $\{HOSPITAL\_IDENTIFIER, RECORD\_NO, NHS\_NUMBER, PATIENT\_SURNAME, PATIENT\_FORENAME, PATIENT\_DOB, ADMISSION\_DATE\}$	Compiles previous columns for the Patient Info page
+ $\underline{INITIAL\_DIAGNOSIS}$: String = "InitialDiagosis"	Declares InitialDiagnosis
+ $\underline{ADMISSION\_AFTER\_NSTEMI}$: String = "AdminStemi"	Declares AdminStemi
+ $\underline{HIGH\_RISK\_NSTEMI}$: String = "HiRisknSTEMI"	Declares HiRisknSTEMI
+ $\underline{INTERVENTIONAL\_PROCEDURE}$: String = "InterventionalProcedure"	Declares InterventionalProcedure
+ $\underline{RETURN\_TO\_REFERRING\_HOSPITAL}$: String = "ReferHospitalReturn"	Declares ReferHospiralReturn
+ $\underline{INTERVENTIONAL\_CENTRE\_CODE\_ID}$: String = "InterventionCentreCode"	Declares InterventionCentreCode

+ $\underline{DIAGNOSIS}$: String[] = {$INITIAL\_DIAGNOSIS$, $ADMISSION\_AFTER\_NSTEMI$, $HIGH\_RISK\_NSTEMI$, $INTERVENTIONAL\_PROCEDURE$, $RETURN\_TO\_REFERRING\_HOSPITAL$, $INTERVENTIONAL\_CENTRE\_CODE\_ID$}	Compiles previous columns for Initial Diagnosis page
+ $\underline{PATIENT\_GENDER}$: String = "Gender"	Declares Gender
+ $\underline{PATIENT\_ETHNICITY}$: String = "Ethnicity"	Declares Ethnicity
+ $\underline{ADMISSION\_METHOD}$: String = "AdminMethod"	Declares AdminMethod
+ $\underline{ADMISSION\_WARD}$: String = "AdminWard"	Declares AdminWard
+ $\underline{GP\_PCT\_CODE}$: String = "GPCode"	Declares GPCode
+ $\underline{PATIENT\_POST\_CODE}$: String = "PostCode"	Declares PostCode
+ $\underline{ADMITTING\_CONSULTANT}$: String = "AdminConsul"	Declares AdminConsul
+ $\underline{ADMISSION\_STATUS}$: String = "AdminStatus"	Declares AdminStatus
+ $\underline{PLACE\_FIRST\_12\_LEAD\_ECG\_PERFORMED}$: String = "FirstECG"	Declares FirstECG
+ $\underline{NHS\_VERIFICATION}$: String = "NHSVerif"	Declares NHSVerif
+ $\underline{REFERRAL\_HOSPITAL}$: String = "RefHospital"	Declares RefHospital
+ $\underline{ADMISSION}$: String[] = {$PATIENT\_GENDER$, $PATIENT\_ETHNICITY$, $ADMISSION\_METHOD$, $ADMISSION\_WARD$, GP_PCT_CODE, $PATIENT\_POST\_CODE$, $ADMITTING\_CONSULTANT$, $ADMISSION\_STATUS$, $PLACE\_FIRST\_12\_LEAD\_ECG\_PERFORMED$, $NHS\_VERIFICATION$, $REFERRAL\_HOSPITAL$}	Compiles previous columns for Demographics and Admission page
+ $\underline{INITIAL\_REPERFUSION\_TREATMENT}$: String = "InitialReperfusionTreat"	Declares InitialReperfusionTreat
+ $\underline{REPERFUSION\_NOT\_GIVEN}$: String = "ReperNotGiven"	Declares ReperNotGiven
+ $\underline{ECG\_DETERMINING\_TREATMENT}$: String = "ECGDetermineTreat"	Declares ECGDetermineTreat
+ $\underline{ECG\_QRS\_COMPLEX\_DURATION}$: String = "$ECG\_QRSComplex$"	Declares $ECG\_QRSComplex$
+ $\underline{STEMI\_LOCATION}$: String = "LocationSTEMI"	Declares LocationSTEMI
+ $\underline{INTERVENTIONAL\_CENTRE\_CODE}$: String = "ReperInterventionCentre"	Declares ReperInterventionCentre
+ $\underline{INFARCTION\_SITE}$: String = "InfarctionSite"	Declares InfarctionSite
+ $\underline{REPERFUSION}$: String[] = {$INITIAL\_REPERFUSION\_TREATMENT$, $REPERFUSION\_NOT\_GIVEN$, $ECG\_DETERMINING\_TREATMENT$, $ECG\_QRS\_COMPLEX\_DURATION$, $STEMI\_LOCATION$, $INTERVENTIONAL\_CENTRE\_CODE$, $INFARCTION\_SITE$}	Compiles previous columns for Initial Reperfusion page

+ $\underline{CORONARY\_ANGIO}$: String = "CoronaryAngio"	Declares CoronaryAngio
+ $\underline{REFERRAL\_DATE}$: String = "ReferralDate"	Declares ReferralDate
+ $\underline{ANGIO\_PERFORM\_DELAY}$: String = "AngioDelay"	Declares AngioDelay
+ $\underline{ANGIO\_DATE}$: String = "AngioDate"	Declares AngioDate
+ $\underline{INTERVENTIONAL\_CENTRE\_CODE\_AN}$: String = "AngioInterventionCentre"	Declares AngioInterventionCentre
+ $\underline{LOCAL\_INTERVENTION}$: String = "LocalIntervention"	Declares LocalIntervention
+ $\underline{CORONARY\_INTERVENTION}$: String = "CoronaryIntervention"	Declares CoronaryIntervention
+ $\underline{PATIENT\_RETURN}$: String = "ReturnExpected"	Declares ReturnExpected
+ $\underline{DAYCASE\_TRANSFER}$: String = "DaycaseTransfer"	Declares DaycaseTransfer
+ $\underline{REFERRING\_RETURN}$: String = "ReferringHospitalReturn"	Declares ReferringHospitalReturn
+ $\underline{ANGIOGRAPHY}$: String[] = $\{CORONARY\_ANGIO, REFERRAL\_DATE, ANGIO\_PERFORM\_DELAY, ANGIO\_DATE, INTERVENTIONAL\_CENTRE\_CODE\_AN, LOCAL\_INTERVENTION, CORONARY\_INTERVENTION, PATIENT\_RETURN, DAYCASE\_TRANSFER, REFERRING\_RETURN\}$	Compiles previous columns for Angiography page
+ $\underline{SYSTOLIC}$: String = "SystolicBP"	Declares SystolicBP
+ $\underline{HEART\_RATE}$: String = "HeartRate"	Declares HeartRate
+ $\underline{KILLIP\_CLASS}$: String = "KillipClass"	Declares KillipClass
+ $\underline{BMI}$: String = "BMI"	Declares BMI
+ $\underline{HEIGHT}$: String = "Height"	Declares Height
+ $\underline{WEIGHT}$: String = "Weight"	Declares Weight
+ $\underline{EXAMINATIONS}$: String[] = $\{SYSTOLIC, HEART\_RATE, KILLIP\_CLASS, BMI, HEIGHT, WEIGHT\}$	Compiles previous columns for Examinations page
+ $\underline{PREVIOUS\_AMI}$: String = "PrevAMI"	Declares PrevAMI
+ $\underline{HYPERTENSION}$: String = "Hypertension"	Declares Hypertension
+ $\underline{CEREBROVASCULAR}$: String = "CerebroDisease"	Declares CerebroDisease
+ $\underline{PREVIOUS\_PCI}$: String = "PrevPCI"	Declares PrevPCI
+ $\underline{SMOKING}$: String = "Smoking"	Declares Smoking
+ $\underline{DIABETES}$: String = "Diabetes"	Declares Diabetes
+ $\underline{PREVIOUS\_ANGINA}$: String = "PrevAngina"	Declares PrevAngina
+ $\underline{HYPERCHOLESTEROL}$: String = "Hypercholesterol"	Declares Hypercholesterol
+ $\underline{ASTHMA\_COPD}$: String = "AsthmaCOPD"	Declares AsthmaCOPD
+ $\underline{PREVIOUS\_CABG}$: String = "PrevCABG"	Declares PrevCABG
+ $\underline{HEART\_FAILURE}$: String = "HeartFailure"	Declares HeartFailure
+ $\underline{PV\_DISEASE}$: String = "PeriphVascularDisease"	Declares PeriphVascularDisease

+ $\underline{RENAL\_FAILURE}$: String = "RenalFailure"	Declares RenalFailure
+ $\underline{FAMILY\_CHD}$: String = "FamilyCHD"	Declares FamilyCHD
+ $\underline{MEDICAL\_HISTORY}$: String[] = {$PREVIOUS\_AMI$, $HYPERTENSION$, $CEREBROVASCULAR$, $PREVIOUS\_PCI$, $SMOKING$, $DIABETES$, $PREVIOUS\_ANGINA$, $HYPERCHOLESTEROL$, $ASTHMA\_COPD$, $PREVIOUS\_CABG$, $HEART\_FAILURE$, $PV\_DISEASE$, $RENAL\_FAILURE$, $FAMILY\_CHD$}	Compiles previous columns for Medical History page
+ $\underline{TAG}$: String = "DBAdapter"	Used when updating the Database's schema
- $\underline{DATABASE\_NAME}$: String = "minap"	Names the Database
- $\underline{TABLE\_NAME}$: String = "patient"	Names the patient table
- $\underline{DATABASE\_VERSION}$: Integer = 11	Must be increase when the schema is changed
- $\underline{DATABASE\_CREATE}$: String	Holds the SQL Statement that creates the Database and table
- Context : Context	Provides context for the session when needed
- DBHelper : DatabaseHelper	Used for helping SQLite operations
- db : SQLiteDatabase	The Database itself
- <<class>> DatabaseHelper()	¡¡extends SQLiteOpenHelper¿¿ Inner class, creates and/or updates the database
+ <<override>> onCreate(db : SQLiteDatabase) : void	Creates the database, throws exception if unable to
+ <<override>> onUpgrade(db : SQLiteDatabase, oldVersion : Integer, newVersion : Integer) : void	Clears, then upgrades the database
- concatenateArrays(page0 : String[], page1 : String[], page2 : String[], page3 : String[], page4 : String[], page5 : String[], page6 : String[]) : String[]	Concatenates all page column arrays
+ <<constructor>> DBAdapter(ctx : Context)	Uses DBHelper to create and operate the database
+ open() : DBAdapter	Returns the writable database
+ close() : void	Closes the database

+ insertPatient(id : String, forename : String, surname : String, dob : String, nhs : String, hId : String, admDate : String) : Boolean	Returns true if parameters have been inserted onto database's patient info section
+ updatePatientInfo(oldid : String, newid : String, forename : String, surname : String, dob : String, nhs : String, hId : String, admDate : String) : Boolean	Returns true if parameters were used to update database's patient info section
+ getPatientInfo(id : String) : Cursor	Returns a cursor object containing the database's patient info section where id = recordNumber
+ updateInitialDiagnosis(id : String, diagnosis : String, admission : String, nstemi : String, procedure : String, refer : String, code : String) : Boolean	Returns true if parameters were used to update the database's initial diagnosis section
+ getDiagnosis(id : String) : Cursor	Returns a cursor object containing the database's initial diagnosis section where id = recordNumber
+ updateDemographics(id : String, gender : String, ethnicity : String, method : String, ward : String, gpcode : String, post : String, consultant : String, status : String, ecg, verif : String, refer : String) : Boolean	Returns true if parameters were used to update the database's Demographics and Admission section
+ getDemographics(id : String) : Cursor	Returns a cursor object containing the database's demographics and admission section where id = recordNumber
+ updateInitialReperfusion(id : String, treatment : String, reperfusion : String, ecgtreat : String, ecgqrs : String, location : String, iccode : String, infarction : String) : Boolean	Returns true if parameters were used to update the database's Initial Reperfusion section
+ getReperfusion(id : String) : Cursor	Returns a cursor object containing the database's initial reperfusion section where id = recordNumber
+ updateAngiography(id : String, angio : String, drefer : String, adelay : String, adate : String, acode : String, inter : String, coronary : String, patret : String, daycase : String, refret : String) : Boolean	Returns true if parameters were used to update the database's Angiography section

+ getAngiography(id : String) : Cursor	Returns a cursor object containing the database's angiography section where id = recordNumber
+ updateExaminations(id : String, systolic : String, heart : String, killip : String, bmi : String, height : String, weight : String) : Boolean	Returns true if parameters were used to update the database's Examinations section
+ getExaminations(id : String) : Cursor	Returns a cursor object containing the database's examinations section where id = recordNumber
+ updateMedicalHistory(id : String, ami : String, tension : String, cerebro : String, pci : String, smoke : String, diabetes : String, angina : String, choles : String, asthma : String, cabg : String, heart : String, vascular : String, renal : String, chd : String) : Boolean	Returns true if parameters were used to update the database's Medical History section
+ getMedicalHistory(id : String) : Cursor	Returns a cursor object containing the database's medical history section where id = recordNumber
+ deletePatient(id : String) : Boolean	Returns true if record where id = recordNum has been deleted
+ allPatients() : Cursor	Returns a cursor object containing all information on the database

Diabetes	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.MedicalHistory	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- diabetes : Byte	Holds the short code for patient's diabetes status
- diabetesLongCode : String	Holds the long code associated with diabetes
+ <<constructor>> Diabetes()	Sets the appropriate superclass values
+ setDiabetes(diabete : Byte) : Boolean	Returns true if parameter passes validation rules
+ getDiabetes() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with diabetes variable

DOB	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.PatientInfo	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
<<import>> java.text.ParseException	
<<import>> java.text.SimpleDateFormat	
<<import>> java.util.Date	
sd : SimpleDateFormat = new SimpleDateFormat("dd/mm/yyyy")	Holds the String format desired for dob
- dob : String	Holds the patient's date of birth
- *DATE_FORMAT* : String = "01/01/1900"	Lower bound for date range check
- twentyYrsAgo : String = "01/01/1994"	Upper bound for date range check
+ <<constructor>> DOB()	Set the appropriate superclass values
+ setDOB(bDate : Date) : Boolean	Checks the passed Date against validation rules, returns true if passed
+ getDOB() : String	Returns dob variable

EcgDetermineTreatment	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.InitialReperfusion	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- ecgDetermineTreatment : Byte	Holds the short code for patient's ECG determining treatment
- ecgDetermineTreatmentLongCode : String	Holds the long code associated with ecgDetermine-Treatment
+ <<constructor>> EcgDetermineTreatment()	Sets the appropriate superclass values
+ setECGTreatment(eDetermineTreatment : Byte) : Boolean	Returns true if parameter passes validation rules
+ getECGTreatment() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with ecgDetermine-Treatment variable

EcgQRSComplex	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.InitialReperfusion	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- ecgQRSComplex : Byte	Holds the short code for patient's ECG / QRS Complex
- ecgQRSComplexLongCode : String	Holds the long code associated with ecgQRSComplex
+ <<constructor>> EcgQRSComplex()	Sets the appropriate superclass values
+ setECGQRSComplex(eQRSComplex : Byte) : Boolean	Returns true if parameter passes validation rules
+ getECGQRSComplex() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with ecgQRSComplex variable

FamilyCHD	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.MedicalHistory	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- familyCHD : Byte	Holds the short code for patient's family CHD status
- familyCHDLongCode : String	Holds the long code associated with familyCHD
+ <<constructor>> FamilyCHD()	Sets the appropriate superclass values
+ setFamilyCHD(hFailure : Byte) : Boolean	Returns true if parameter passes validation rules
+ getFamilyCHD() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with familyCHD variable

FirstECG	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.DemographicsAdmission	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- firstECG : Byte	Holds the short code for patient's first ECG instance
- ecgLongCode : String	Holds the long code associated with firstECG
+ <<constructor>> FirstECG()	Sets the appropriate superclass values
+ setFirstECG(fECG : Byte) : Boolean	Returns true if parameter passes validation rules
+ getFirstECG() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with firstECG variable

Gender	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.DemographicsAdmission	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- patientGender : Byte	Holds the short code for patient's gender
- genderLongCode : String	Holds the long code associated with patientGender
+ <<constructor>> Gender()	Sets the appropriate superclass values
+ setPatientGender(gen : Byte) : Boolean	Returns true if parameter passes validation rules
+ getPatientGender() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with patientGender variable

GPCode	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.DemographicsAdmission	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- gpCode : String	Holds the patient's GP code
+ VAL_LENGTH : Short = 6	Holds the maximum length for gpCode
+ <<constructor>> GPCode()	Sets the appropriate superclass values
+ setGPCode(pctCode : String) : Boolean	Returns true if parameter passes validation rules
+ getGPCode() : String	Returns gpCode

HeartFailure	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.MedicalHistory	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- heartFailure : Byte	Holds the short code for patient's heart failure status
- heartFailureLongCode : String	Holds the long code associated with heartFailure
+ <<constructor>> HeartFailure()	Sets the appropriate superclass values
+ setHeartFailure(hFailure : Byte) : Boolean	Returns true if parameter passes validation rules
+ getHeartFailure() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with heartFailure variable

HeartRate	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.Examinations	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- heartRate : Double	Holds the patient's heart rate
+ <<constructor>> HeartRate()	Set the appropriate superclass values
+ setHeartRate(hRate : Double) : Boolean	Returns true if parameter passes validation
+ getHeartRate() : String	Returns heartRate

Height	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.Examinations	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- height : Double	Holds the patient's height
+ <<constructor>> Height()	Set the appropriate superclass values
+ setHeight(h : Double) : Boolean	Returns true if parameter passes validation
+ getHeight() : String	Returns height

HiRisknSTEMI	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.InitialDiagnosis	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- hiRisknSTEMI : Byte	Holds the short code choice for High Risk nSTEMI
- nSTEMILongCode : String	Holds the long code associated with hiRisknSTEMI
+ <<constructor>> HiRisknSTEMI()	Sets the appropriate superclass values
+ setHiRisknSTEMI(hiNSTEMI : Byte) : Boolean	Returns true if parameter passes validation rules
+ getHiRisknSTEMI() : String	Returns the selected short code and corresponding long code as a String

HospitalIdentifier	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.PatientInfo	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- hospitalID : String	Holds a three letter string for hospitalID
+ VAL_LENGTH : Short = 3	Holds the valid length for hospitalID
+ <<constructor>> HospitalIdentifier()	Sets the appropriate superclass values
+ setHospitalIdentifier(hospId : String) : Boolean	Checks the paramenter against validation rules, returns true if passed
+ getHospitalIdentifier() : String	Returns hospitalID

Hypercholesterolaemia	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.MedicalHistory	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- hyperCholesterolaemia : Byte	Holds the short code for patient's hypercholesterolaemia status
- hyperCholesterolaemiaLongCode : String	Holds the long code associated with hyperCholesterolaemia
+ <<constructor>> Hypercholesterolaemia()	Sets the appropriate superclass values
+ setHypercholesterol(hCholesterolaemia : Byte) : Boolean	Returns true if parameter passes validation rules
+ getHypercholesterol() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with hyperCholesterolaemia variable

Hypertension	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.MedicalHistory	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- hyperTension : Byte	Holds the short code for patient's hypertension status
- hyperTensionLongCode : String	Holds the long code associated with hyperTension
+ <<constructor>> Hypertension()	Sets the appropriate superclass values
+ setHypertension(hTension : Byte) : Boolean	Returns true if parameter passes validation rules
+ getHypertension() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with hyperTension variable

InitialDiagnosis	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.InitialDiagnosis	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- initialDiagnosis : Byte	Holds the short code choice for Initial Diagnosis
- diagnosisLongCode : String	Holds the long code associated with initialDiagnosis
+ <<constructor>> InitialDiagnosis()	Sets the appropriate superclass values
+ setInitialDiagnosis(iniDiagnosis : Byte) : Boolean	Returns true if parameter passes validation rules
+ getInitialDiagnosis() : String	Returns the selected short code and corresponding long code as a String
+ getInitialLongCode() : String	Returns diagnosisLongCode

InitialReperfusion	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.InitialReperfusion	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- initialReperfusion : Byte	Holds the short code for patient's initial reperfusion
- initialReperfusionLongCode : String	Holds the long code associated with initialReperfusion
+ <<constructor>> InitialReperfusion()	Sets the appropriate superclass values
+ setInitialReperfusion(iReperfusion : Byte) : Boolean	Returns true if parameter passes validation rules
+ getInitialReperfusion() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with initialReperfusion variable

InfarctionSite	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.InitialReperfusion	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- infarctionSite : Byte	Holds the short code for patient's infarction site
- infarctionSiteLongCode : String	Holds the long code associated with infarctionSite
+ <<constructor>> InfarctionSite()	Sets the appropriate superclass values
+ setInfarctionSite(iSite : Byte) : Boolean	Returns true if parameter passes validation rules
+ getInfarctionSite() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with infarctionSite variable

InterventionalCentreCode	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.InitialDiagnosis	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- interventionalID : String	Holds the patient's Interventional Centre Code
+ VAL_LENGTH : Short = 3	Holds the maximum length for interventionalID
+ <<constructor>> InterventionalCentreCode()	Sets the appropriate superclass values
+ setInterventionalCentre(iCode : String) : Boolean	Returns true if parameter passes validation rules
+ getInterventionalCentre() : String	Returns interventionalID
Note: This class is used three times within the Patient singleton	

InterventionalProcedure	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.InitialDiagnosis	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- interventionalProcedure : Byte	Holds the short code for Interventional Procedure
- procedureLongCode : String	Holds the long code associated with interventionalProcedure
+ <<constructor>> InterventionalProcedure()	Sets the appropriate superclass values
+ setInterventionalProcedure(interHosProcedure : Byte) : Boolean	Returns true if parameter passes validation rules
+ getInterventionalProcedure() : String	Returns the selected short code and corresponding long code as a String

KillipClass	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.Examinations	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- killipClass : Byte	Holds the short code for patient's coronary angiography
- killipClassLongCode : String	Holds the long code associated with killipClass
+ <<constructor>> KillipClass()	Sets the appropriate superclass values
+ setKillipClass(kClass : Byte) : Boolean	Returns true if parameter passes validation rules
+ getKillipClass() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with killipClass variable

LocationAtSTEMI	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.InitialReperfusion	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- locationAtSTEMI : Byte	Holds the short code for patient's location at STEMI
- locationAtSTEMILongCode : String	Holds the long code associated with locationAtSTEMI
+ <<constructor>> LocationAtSTEMI()	Sets the appropriate superclass values
+ setSTEMILocation(lAtSTEMI : Byte) : Boolean	Returns true if parameter passes validation rules
+ getSTEMILocation() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with locationAtSTEMI variable

LocalInterventionDate	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.Angiography	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
<<import>> java.text.ParseException	
<<import>> java.text.SimpleDateFormat	
<<import>> java.util.Date	
sd : SimpleDateFormat = new SimpleDateFormat("dd/mm/yyyy")	Holds the String format desired for interventionDate
- interventionDate : String	Holds the patient's local intervention date
- *DATE_FORMAT* : String = "01/01/2000"	Lower bound for date range check
- now : String = sd.format(new Date())	Holds current Date as a String, used for range check
+ <<constructor>> LocalInterventionDate()	Set the appropriate superclass values
+ setInterventionDate(iDate: Date) : Boolean	Returns true if parameter passes validation
+ getInterventionDate() : String	Returns interventionDate variable

NHSNumber	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.PatientInfo	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- nhsNumber : String	Holds the patient's NHS number
+ *VAL_LENGTH* : Short = 10	Holds the maximum length for nhsNumber
+ <<constructor>> NHSNumber()	Sets the appropriate superclass values
+ <<setNHSNum>>(nhsNum : String) : Boolean	Checks the parameter against validation rules, returns true if passed
+ <<getNHSNum>>() : String	Returns nhsNumber

NHSVerification	**<<extends Value>>**
˜com.ucl.appteam7.minapmobile.model.values.DemographicsAdmission	
<<import>> com.ucl.appteam7.minapmobile.model.Value	
- verification : Byte	Holds the short code for patient's NHS verification
- verificationLongCode : String	Holds the long code associated with verification
+ <<constructor>> NHSVerification()	Sets the appropriate superclass values
+ setVerification(verif : Byte) : Boolean	Returns true if parameter passes validation rules
+ getVerification() : String	Returns the selected short code and corresponding long code as a String
+ getLongCode() : String	Returns the long code associated with verification variable

AdmissionAfterNSTEMI	**<<extends Value>>**
˜	

AdmissionAfterNSTEMI	**<<extends Value>>**
˜	

AdmissionAfterNSTEMI	**<<extends Value>>**
˜	

AdmissionAfterNSTEMI	**<<extends Value>>**
~	

B Client Communication

Our first contact with the client was on Monday 28th October, with a short meeting outlining the aims of the MINAP project the following day. We have had 3 meetings with the client and other members of MINAP/NICOR so far. All meetings have been recorded (audio) with the consent of those present. A brief summary of the people present and key talking points are outlined below.

B.1 Project Introduction & Requirements (1/11/13)

B.1.1 Meeting Agenda

To get a clear understanding of the project requirements, and to hammer down a realistic project specification that can be delivered within 3 months.

B.1.2 People Present

App Team 7, Lucia Gavalova (Project Manager), Fabian D'Souza (Server Admin), Owen Nicholas, "Tech-guy"

B.1.3 Discussion

1. Feasibility of creating a mobile app from the current web app
   (a) Tech-guy suggests that it is likely that XPages (open-source javascript framework used for business solutions) is the only way of creating an app
   (b) Tech-guy has no idea if the Domino server housing the MINAP data can be accessed via mobile, though suggests XPages as a starting point
2. Fabian called in to hopefully get better ideas on how to implement a mobile solution working with the current technology stack
   (a) Recommends looking at using IBM Lotus Notes (client software to Domino server) as an intermediary for the app
   (b) Suggests that Java could theoretically be used by including a notes.jar file which allows the development of a Lotus Notes plug-in
   (c) Promises to send relevant links that may help with finding a solution
3. Owen and tech-guy suggests that the validation of 130 values of the MINAP dataset will definitely take more than 3 months.

B.1.4 Outcomes

We were thoroughly confused after the meeting with regards to the Domino Server. Fabian did send the e-mail but it only served to confuse even further. We however decided to spend some time researching on the possible ways to communicate with this legacy technology. Lucia provided us with documents containing the full set of data values and validations rules for us to understand. We also provided details to gain access to MINAPs development server to have access to the current web application - this was only processed 2 weeks later.

B.2 UI Feedback (15/11/13)

B.2.1 Meeting Agenda

To obtain client feedback on our preliminary UI, clarify confusions about the MINAP dataset, validation, and use. The target platform needed to be locked down.

B.2.2 People Present

App Team 7, Lucia Gavalova

B.2.3 Discussion

1. Marco David Corrales presented the UI sketches to Lucia
    (a) Lucia is happy with the proposal of a design similar to the current web app
    (b) Mentions that the search functionality can just mirror the simple search in the current web app
    (c) Requests that a tutorial for non-techie users
    (d) David notes down minor comments on UI sketches
2. Team requests a simplified version of the navigation map (and by extension, the 130 value dataset)
    (a) Lucia informs us of her initial motivation for a MINAP mobile app
        i. Mobile app serves as a starting point for medical staff to create a record for patients eligible to be monitored through MINAP when visiting non-cardiac wards
        ii. This helps alleviate the current problem of having positively skewed outcomes as the current patients being recorded are in specialist wards, and more likely to receive treatment when needed

(b) The mobile app could therefore exist with just a subset of the functionality of the existing web app

3. Lucia requests an auto-save feature like Microsoft Word to allow sessions to be resumed later within the same day

4. Amer Kamil Zainal requests if a survey could be designed to get a solid feel of the target audiences primary mobile operating system

   (a) Lucia agrees - Kamil promises to design survey

B.2.4 Outcomes

We managed to come to a mutual agreement that the mobile app could serve its main purpose by implementing only a subset of the total MINAP dataset. Lucia promised to send a document detailing the exact values that would need to be included to fulfil this requirement - the document was received some time after the next meeting. A flow diagram of the survey was completed and handed over to Lucia at the next meeting.

B.3 Developer Session (20/11/13)

B.3.1 Meeting Agenda

To understand how the current web app works and how it interacts with the Domino Server; to hand over the device survey flow chart for critique and deployment on SurveyMonkey.

B.3.2 People Present

App Team 7, Lucia Gavalova, Sue Manuel (Developer), Fabian D'Souza

B.3.3 Discussion

1. Sue informs that the web app is made in Javascript, running on top of a Lotus Notes form (in turn, running on the Domino Server)

2. The Javascript methods use the Lotus Notes interface to retrieve data from the database

3. Sue mistakenly tells that validation of values is all server-side - a major setback if correct

4. Fabian called in to verify server-side validation claims - validation is client-side

5. Team request to have a copy of client-side validation code to cross-check with the data validation documents given

6. Discussion with Fabian regarding connecting to Domino Server

   (a) Team confirms research on how to communicate with Domino Server is correct

      i. The Domino Server allows the creation of a web service (consumer and provider)

      ii. This would make the server be compatible with any application that can consume a web service

   (b) Fabian however insists that making our app communicate with a Domino Server is not a key priority, and that spinning off another web server (e.g. Apache + Microsoft SQL Server) with a similar web service capabilities will satisfy the requirements

7. Device survey flow diagram presented and accepted as is by Lucia

B.3.4 Outcomes

The team is now confident in delivering an application with the scaled-down specifications (fewer than 130 validations and Domino Server compatibility not being a priority). A link to the SurveyMonkey device survey was sent to the team, pending approval (by the team). However, due to the reduction of requirements occurring so close to the first report milestone (24/11/13), the team was unable to fully capture this more manageable system in Java.

B.4 Device Survey

Draft proposal: To determine how many target medical personnel own smartphones (or considering purchase in the near future), and would use it in a work setting. + find out specific OS and screen sizes via requesting visit of a site on their mobile (loaded with Google Analytics).

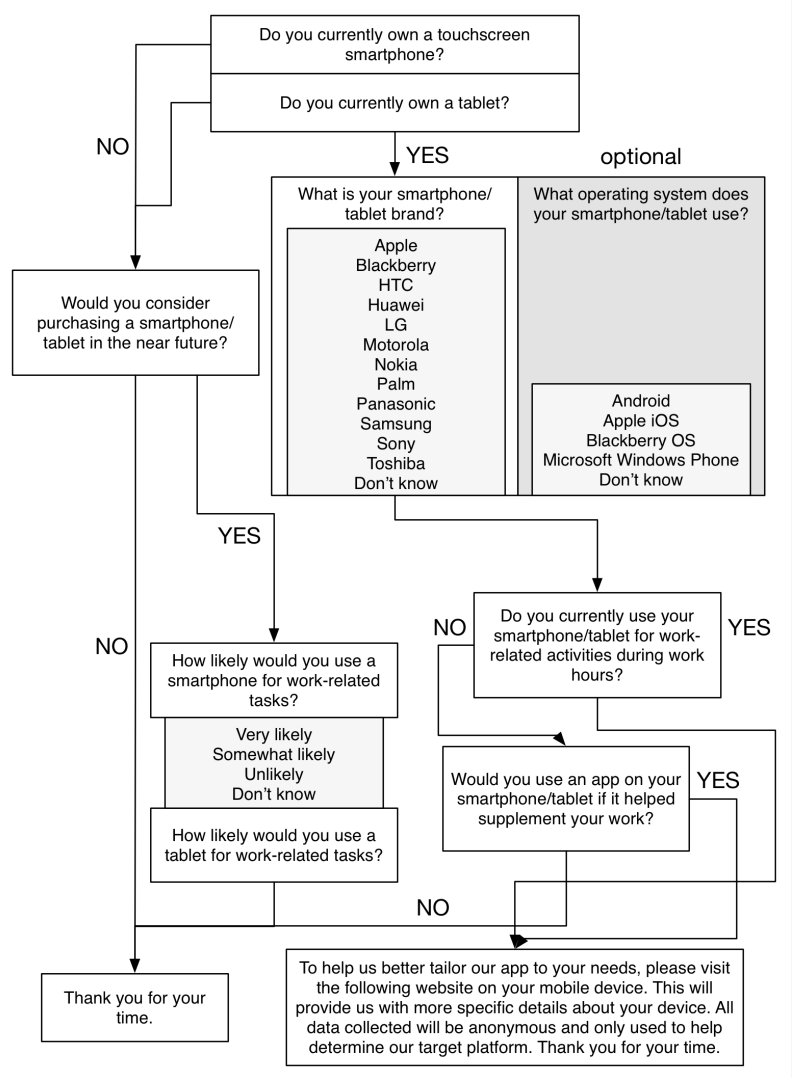

Figure 1: Initial survey flow

It was decided through client feedback that the survey flow logic could be replaced with a simple one-page linear survey due to the straightforward nature of the questions. The contents of the final survey are below.

Final SurveyMonkey Survey

1. Do you currently own a touchscreen smartphone or a tablet?
   (a) Smartphone only
   (b) Tablet only
   (c) Smartphone and tablet
   (d) Neither
2. Would you consider purchasing a smartphone/tablet in the near future?
   (a) Yes
   (b) No
3. What is your smartphone/tablet brand?
   (a) Apple
   (b) Blackberry
   (c) HTC
   (d) Huawei
   (e) LG
   (f) Motorola
   (g) Nokia
   (h) Palm
   (i) Panasonic
   (j) Samsung
   (k) Sony
   (l) Toshiba
   (m) Other (please specify)
4. What operating system does your smartphone/tablet use (if known)?
   (a) Android
   (b) Apple iOS
   (c) Blackberry OS
   (d) Microsoft Windows Phone

(e) Other (please specify)

5. Do you currently use your smartphone/tablet for work-related activities during work hours?

   (a) Yes

   (b) No

6. Would you use an app on your smartphone/tablet if it helped supplement your work?

   (a) Yes

   (b) No

7. How likely would you be to use a smartphone for work-related tasks?

   (a) Very likely

   (b) Somewhat likely

   (c) Unlikely

   (d) Don't know

8. How likely would you be to use a tablet for work-related tasks?

   (a) Very likely

   (b) Somewhat likely

   (c) Unlikely

   (d) Don't know

9. To help us better tailor our app to your needs, please visit the following website on your mobile device `http://goo.gl/KEevis`. This will provide us with more specific details about your device. All data collected will be anonymous and only used to help determine our target platform. Please feel free to add any comments.

C Internal Meetings and Documentation