**Project: Borderlife Laboratory Information System**

**Overview**

This is for a backoffice website i.e. only for staff to use. It will be used by a laboratory that receives samples of someone’s blood or urine for tests. The sample is logged into the website system and tests are run by one or more of three departments. The results are entered into the system to generate reports called Test Reports.

1. ***Scope and Parameters of Design***
2. The design objectives of the application are:
   1. The application must be clean, user-friendly, and allow quick access to perform tasks.
3. Login screen, username; password; forgot password
4. Main navigation sections of the application. These are visible depdning on the user access level. All possible items are:

Dashboard

New Sample (start of the process – adding a sample)

Users (add, edit, delete)

Assets (institutions, doctors, patients, charges and reference ranges, notes)

Reports (Reporting and Analytics, Test Reports)

Footer Navigation:

Privacy Statement

Legal Notices

1. Dashboard:

* List of samples being processed (i.e. does not included completed). columns: Test #, Access #, Date received, patient name, action (delete, update, reports). Each column has click to sort by that column using up / down arrow next to column name.
* Pagination with 20 per page

1. New Sample

With fields:

* + Test Number - system generated number, not editable (numeric, 6 characters, not editable)
  + Access # - editable number entered by user (alphanumeric)
  + Collected - current date (mm dd,yyyy) editable
  + Received - date field (mm dd,yyyy) editable
  + Time – system generated, not editable. current system time
  + Patient Name - Last Name First Name (alphabetical). Ability to search and if not found add.
  + Institution - Doctors Office or Hospital (alphabetical). Ability to search and if not found add.
  + Doctor Name - Doctors Name (alphabetical). Ability to search and if not found add.
  + Test Requested - This is linked to the Charges Database. It shows the various tests offered by BorderLife and their costs. Allows selecting multiple tests and these populate into the respective report when selected.
  + Bill - Who is to be billed - One of three selections: Patient, Doctor, Other

1. Users

The user creation form will have these fields:

* + User type (Management, Admin, Lab)
  + First Name
  + Surname
  + Email

1. Assets

Institution has these fields, all are required:

* + Institution Name
  + contact number
  + Street name
  + Second line in address
  + Area
  + email address

Doctor has these fields, all are required:

* + Doctor’s Name
  + contact number
  + Street name
  + Second line in address
  + Area
  + email address.

Patient as these fields, all are required:

* + First Name
  + Surname
  + contact number
  + DOB (date picker to be used)
  + sex (male or Female)

Test Charges and Reference range:

This allows entering item costs and assigning a reference range.

The entry fields will be:

* + Name of charge item (mandatory field)
  + Department it belongs to (mandatory field. selection from: Biochemistry / Haematology; Cytology / Gynecology; Urinalysis / Microbiology)
  + Specimen Type (mandatory field. Text field)
  + Cost (mandatory field. numeric field)
  + Reference range (mandatory field. Text field)
  + High value with optional sex (male; female. Allow multiple.)
  + Low value with optional sex (male; female. Allow multiple.)

Notes

These are predefined comments that will be displayed for selection in various parts of the application. Which notes are displayed is based upon the department.

Fields are:

* + Note code (text field)
  + Department (mandatory field. (drop down: Biochemistry / Haematology; Cytology / Gynecology; Urinalysis / Microbiology)
  + Comment

1. Reports

**Reporting and Analytics**

Services Provided

Allows selecting a date range and a service from the drop down.

The report to show:

* + date range, service name in the header
  + List of: Test Management report name; date completed; patient name

Processing Time

Showing the time taken between sample submitted and results entered. Allows selecting a date range to show:

* + Date range in the header
  + List of: Test management report name: test report number; sample submitted date and time; results entered date and time (this is defined as when the report is marked as “completed”; time taken in days and hours.

Billing

Showing charges over a given period grouped by a doctor, patient, or other. Allows selecting a date range and grouped by to show:

* + Date range of report and grouping item selected (doctor or, patient or, other) in the header
  + List of: grouping item (e.g. doctors); total billing charges

Audit Trail

This will be accessed by editing a particular test report (as outlined below) and clicking on the Audit Trial button. With data items:

* + Test number
  + List of: dates and times that a change was made; user that made the change
  + Clicking on any date will show a new page with a list of: field name that was changed; from value; to value

**Test Reports**

There are 3 reports:

1) Biochemistry / Haematology

2) Cytology / Gynecology

3) Urinalysis / Microbiology

Find ( a report )

Search with fields: Test Number; Access Number or; Patient Name.

List of reports with columns:

* + Test #
  + Access #  
    Patient name
  + Date Received
  + Action (edit, view, delete)

Area to select one of the three reports above.

For all reports these buttons should always be visible, even when scrolling

Design concept: using a sticky header:

* + Find (goes to the Find a report above)
  + Save
  + Delete
  + Sign (popup: “Please indicate that you agree with all that is in this report by signing. username and password). If already signed show by [name] and date.
  + completed (with a checkbox, if already checked show the date)

Design concept: the information below can be always displayed and the other items required in each report accessed via tabs set below this information.

Show patient information (not editable)

* + Test number
  + Access number
  + Collected date
  + Received date
  + Time
  + Patient name
  + Bill to (Doctor, Patient, Other)
  + Doctor Name
  + Tests Requested

Report Generator (this is displayed after selecting one of the three reports)

Allowing setting the report to work on.

**BioChemistry / Haematology Test Results** (no tabs i.e. all information on one page)

* + Reference - Paragraph field (alphabetical, editable)
  + Note - Paragraph field (alphanumeric, editable)
  + Table allowing multiple rows (5 columns) showing:
    - Description - (Bio Chem/Haemo tests selected, not editable)
    - Test Results - (alphanumeric, editable)
    - Flag – Automatically populated once the system has a high and low setting for the test. ( editable )
    - Reference Range (alphanumeric field, not editable, pulls info entered on the Charges Database
    - Test Notes - paragraph field (alphanumeric, editable)

**Cytology / Gynecology Test Results** (tabs if needed)

* + History (textarea)
  + Last Period (date picker)
  + Contraceptive (dropdown, if not in list the user can enter and the system will save it)
  + Previous Pap ( date picker )
  + Result ( text )
  + Cervix Examination ( textarea )

Three fields that use a “Notes” interface as defined below. These fields are (all textarea):

* + Specimen Adequacy
  + Diagnostic Interpretation
  + Recommend

**Notes Interface**

This allows the user to select a predefined comment for this field. Once selected, it populates the field and can be edited before being Updated / Appended to the field. Note that if the field already had content, this will be added, and another predefined comment can be further appended.

The same interface can be used to save or edit a pre-defined response.

**Urinalysis / Microbiology Test Results** (tabs to be used for each heading below)

Heading: Chemical Analysis

* + S. Gravity (numeric)
  + PH (numeric)
  + Bilirubin (dropdown, if not in list the user can enter and the system will save it)
  + Blood (dropdown, if not in list the user can enter and the system will save it)
  + Leucocytes (dropdown, if not in list the user can enter and the system will save it)
  + Glucose (dropdown, if not in list the user can enter and the system will save it)
  + Nitrite (dropdown, if not in list the user can enter and the system will save it)
  + Ketones (dropdown, if not in list the user can enter and the system will save it)
  + Urobilinogen (dropdown, if not in list the user can enter and the system will save it)
  + Proteins (dropdown, if not in list the user can enter and the system will save it)
  + Colour ( text )
  + Appearance ( text )

Heading: Microscopy

* + Epith. Cells ( text )
  + Bacteria (dropdown, if not in list the user can enter and the system will save it)
  + White cells ( text )
  + Yeast ( text )
  + Red Cells ( text )
  + Trichomonas ( text )
  + Casts ( text )
  + Crystals ( text )
  + Specimen ( Textarea )

Heading: Specimen:

Type of Specimen

* + Procedure (dropdown: Wet Prep; Gram Stain; Culture; Stool)
  + Note ( text area )

Sensitivity

A list of Profiles is presented, the user can select multiple profiles. Each profile has multiple Sensitivity items associated with it. Once profile(s) are selected the Sensitivity area is populated. The Sensitivity area has:

Columns for (unlimited rows):

* + Test ( text )
  + Antibiotics (prefilled, not editable)
  + Measure ( text )
  + Designation ( text )
  + Sensitivity (checkbox )
  + Resistant ( checkbox)
  + Intermediate ( checkbox)

Review (only one and separate from the columns above)

* + Review ( textarea using the “Notes Interface” as defined above ). There’s one note about “contact lab, only kept for 7 days” that goes on all microbiology reports and this will be prepopulated into this field.

**END**