WEBSITE FEATURES SPECIFICATION

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| **Project Name:** | **BorderLife LIS** |
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1. ***Scope and Parameters of Features***

This document defines the functional components of the LIS.

1. **User Management**

The solution will allow multiple users with different levels of access/capabilities.

The login access can be created by BorderLife which retains full user control over the LIS, and the login credentials are disseminated to each user, for them to utilize when they need to access the system.

Password strength will be enforced to be:

* At least 8 characters
* Contain at least 1 capital letter, 1 lower case letter, 1 number and 1 special character

The user groups will be:

* Management - full access to everything.
* Admin - user can manage (add, edit, delete) tests for the department and users to the system, access to reports, override any “completed” tests to make changes.
* Lab - user can manage (add, edit, delete) tests for the department that the user is assigned to, users can be assigned to multiple departments, access to lab reports. Enter sample and its associated patient data (inclusive of doctor/institution name, requested tests, and costs).

The user creation form will have these fields:

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

Account creation process

When the user creation form is submitted, an email is sent to the new user. This user will need to click on the link sent in the email to set their password.

This email will have the below details:

From address: [admin@borderlifemedlab.com](mailto:admin@borderlifemedlab.com)  
to: the user’s email address  
subject: Your Borderlife LIS Account  
body:

Good Day [first name surname],

Your account has been created, you need to click on the link below to setup your password and 2FA:

[ link ]

Regards  
Borderlife Admin

1. **Reporting and Analytics**

The reports to be developed are listed below, these are separated from the 3 Test Management reports. Reports design and layout will be done and reviewed in the design phase, once agreed upon cannot be changed without a developer. Content in headings or footers can be changed, like address, company details or disclaimers. Other content will also be dynamic and can be changed, with particular reference to the lab director information.

* + 1. A report showing each service provided over a given period - to a local printer, MS Excel, or Google Sheets format. This allows the user to select a date range and shows information with data items:
       1. Date range of report
       2. Service provider name
       3. List of: Test Management report name; date completed; patient name
    2. A report showing the time taken between sample submitted and results entered - to a local printer, MS Excel, or Google Sheets format. This allows the user to select a date range and shows information with data items:
       1. Date range of report
       2. 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.
    3. Billing report showing charges over a given period grouped by a doctor, patient, or other - to a local printer, MS Excel, or Google Sheets format. This allows the user to select a date range, select item to group by and shows information with data items:
       1. Date range of report
       2. Grouping item selected (doctor or, patient or, other)
       3. List of: grouping item (e.g. doctors); total billing charges
    4. An audit trail report that shows for each of the 3 Test Management reports (see section c below) the user that “signs” the report and a date a change was made by a user. NOTE: it does not record the actual change made. This will be accessed by editing a particular test report and clicking on the Audit Trial button. With data items:
       1. Test number
       2. List of: dates and times that a change was made; user that made the change

1. **Test Reports and Assets Management**

**Asset Management**

The interface that allows adding or editing these reports also allows for the management of: doctors; institutions; patients and; charges. These are defined first.

Institution has these fields, all are required: Institution Name, contact number, address, and email address.

Doctor has these fields, all are required: Doctor’s Name, contact number, and email address.

Patient as these fields, all are required: First Name; surname, contact number, and DOB (date picker to be used); sex (male or Female)

**Test Charges:**

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.)

**Adding a Sample:**

When a sample is received it must be added into the system and the associated tests logged. The various data entry fields are:

* + 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.

**Test Reports Management**

There are 3 reports:

* 1. Biochemistry / Haematology
  2. Cytology / Gynecology
  3. Urinalysis / Microbiology

**Interface**

The top of the first page will have a search that allows the user to locate a patient record based upon Test Number; Access Number or; Patient Name.

The first page will also list all reports that the logged in user can access in chronological order, based upon the sample entry date. Allowing the user to edit or delete this test.

**Adding a report**

A patient can have tests falling under any or all of the above reports. The first step in creating a report presents common information and allows for selecting the charge items. Once charge items are selected, one of the reports can then be generated and the related charge items are populated into the report generator for the user to enter the values for the reference ranges.

The common information presented is. None are editable, all originating from when the sample details where entered into the system:

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

Common actions for all reports:

* Sign. This button is only visible if a user with the level of access is logged in. Once clicked the user and date and time it was clicked are recorded. A report cannot be “unsigned”. Once signed, the name and date of the user that signed is displayed in the report.
* Completed. This is visible to the user that have access to add or edit the report. Once clicked the user cannot make changes anymore. The date and time are recorded.

**BioChemistry / Haematology Test Results**

Section: These are the fields of information presented:

* + Test Number - Test Number - system generated number (numeric, 6 characters, not editable)
  + Date - Received - date field (mm dd,yyyy) not editable
  + Profile
  + Patient’s Name - not editable
  + Referring Doctor - not editable

Section: Editable Fields:

* + Reference - Paragraph field (alphabetical, editable)
  + Note - Paragraph field (alphanumeric, editable)
  + Table (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**

Section: These are the fields of information presented:

* + Test Number - Test Number - system generated number (numeric, 6 characters, not editable)
  + Date - Received - date field (mm dd,yyyy) not editable
  + Patient’s Name - not editable
  + Referring Doctor - not editable

Section: Editable fields:

* + - 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**

Section: These are the fields of information presented:

* + Test Number - Test Number - system generated number (numeric, 6 characters, not editable)
  + Date - Received - date field (mm dd,yyyy) not editable
  + Patient’s Name - not editable
  + Referring Doctor - not editable

Section: Editable Fields:

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 )

Section:

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 ( 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.

**Printing**

Reports need to fit on letter or legal sized paper.