

GT COVID-19 Testing System

CS 4400: Introduction to Database Systems

Fall 2020: Semester Project

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Version History

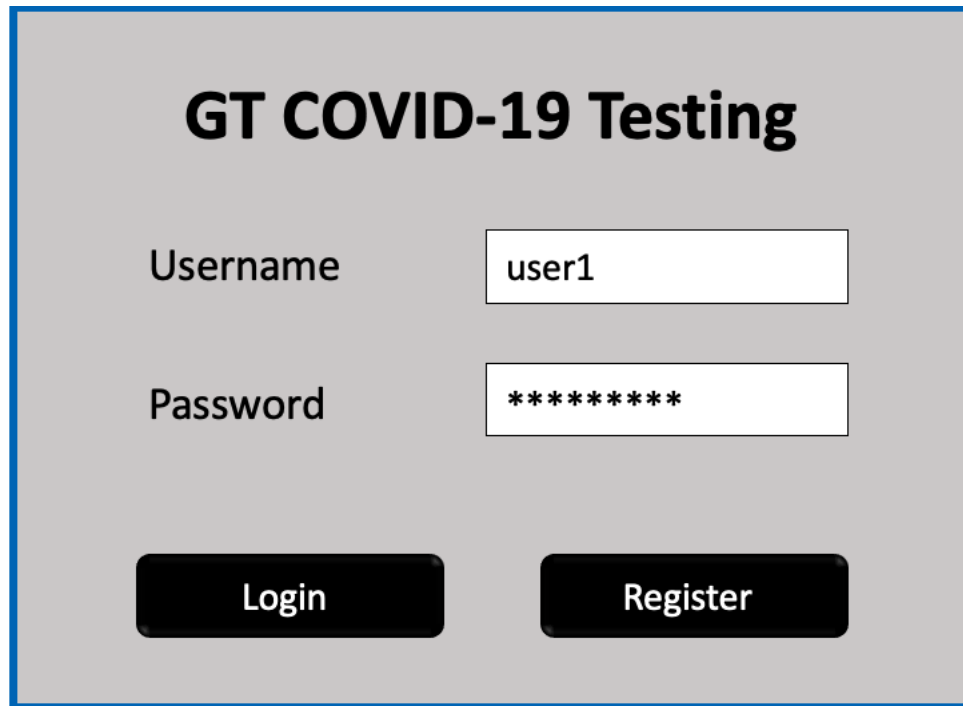
Version	Date	Notes
1	9/15/20	Initial Release
2	9/23/20	Fixing screen 9
3	9/24/20	Screen 3: Admin's can create testing sites
4	10/1/20	Phase II Edits

Project Description

General Notes

1. Users must exactly one of:
 - a. **Employee**- manages and facilitates testing
 - b. **Student**- participates in testing
 - c. **Admin**- manages employee allocation and other logistics
2. An employee must be one or both of:
 - a. **Site Tester**- stationed at the testing sites to collect samples
 - b. **Lab Technician**- work behind the scenes to process tests in the lab
3. Admins are special users that have already been prepopulated into the database. They are not able to be registered in the system.
4. Tables presented in each of the screens must have correct corresponding column names. Additionally, columns are NOT sortable unless it is specified in the description.
5. Dropdown lists must be prepopulated by the database as specified in each's corresponding text-description.
6. Filtering based on certain columns or fields is only required if specified by the description.
7. **Location** can be either:
 - a. East Campus
 - b. West Campus
8. **Housing** options are:
 - a. Student Housing
 - b. Greek Housing
 - c. Off-Campus House
 - d. Off-Campus Apartments
9. Ignore bullets labeled as "System Notes" until phase 3 and phase 4.
10. All columns that have the double arrow are sortable.
11. All filter items are optional.
 - a. For "range" filters, the starting and ending cutoffs are separately optional (ie a start date can be specified without an end date and vice versa).
12. All "range" filters are INCLUSIVE on both ends.
13. All dropdown filters must include ALL as an option for filtering unless otherwise specified.

Screen 1: Login



The image shows a login screen for 'GT COVID-19 Testing'. It features a light gray background with a blue border. At the top, the title 'GT COVID-19 Testing' is displayed in a large, bold, black font. Below the title, there are two input fields. The first is labeled 'Username' and contains the text 'user1'. The second is labeled 'Password' and contains a series of asterisks '*****'. At the bottom of the form, there are two black buttons with white text: 'Login' on the left and 'Register' on the right.

GT COVID-19 Testing

Username

Password

Login **Register**

Notes:

1. Valid "username" and password combination (i.e. exists in the database) are needed for login.

Screen 2: Register

Register

Username	<input type="text" value="user1"/>	Email	<input type="text" value="user1@gatech.edu"/>
First Name	<input type="text" value="User"/>	Last Name	<input type="text" value="One"/>
Password	<input type="password" value="*****"/>	Confirm Password	<input type="password" value="*****"/>

Student

Employee

Housing Type	<input type="text" value="Greek"/>	Location	<input type="text" value="East"/>
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Beck to Login

Register

Register

Username	<input type="text" value="user1"/>	Email	<input type="text" value="user1@gatech.edu"/>
First Name	<input type="text" value="User"/>	Last Name	<input type="text" value="One"/>
Password	<input type="password" value="*****"/>	Confirm Password	<input type="password" value="*****"/>

Student

Employee

Phone No.	<input type="text" value="4705671234"/>	Site Tester?	<input checked="" type="checkbox"/>
		Lab Tech?	<input checked="" type="checkbox"/>

Beck to Login

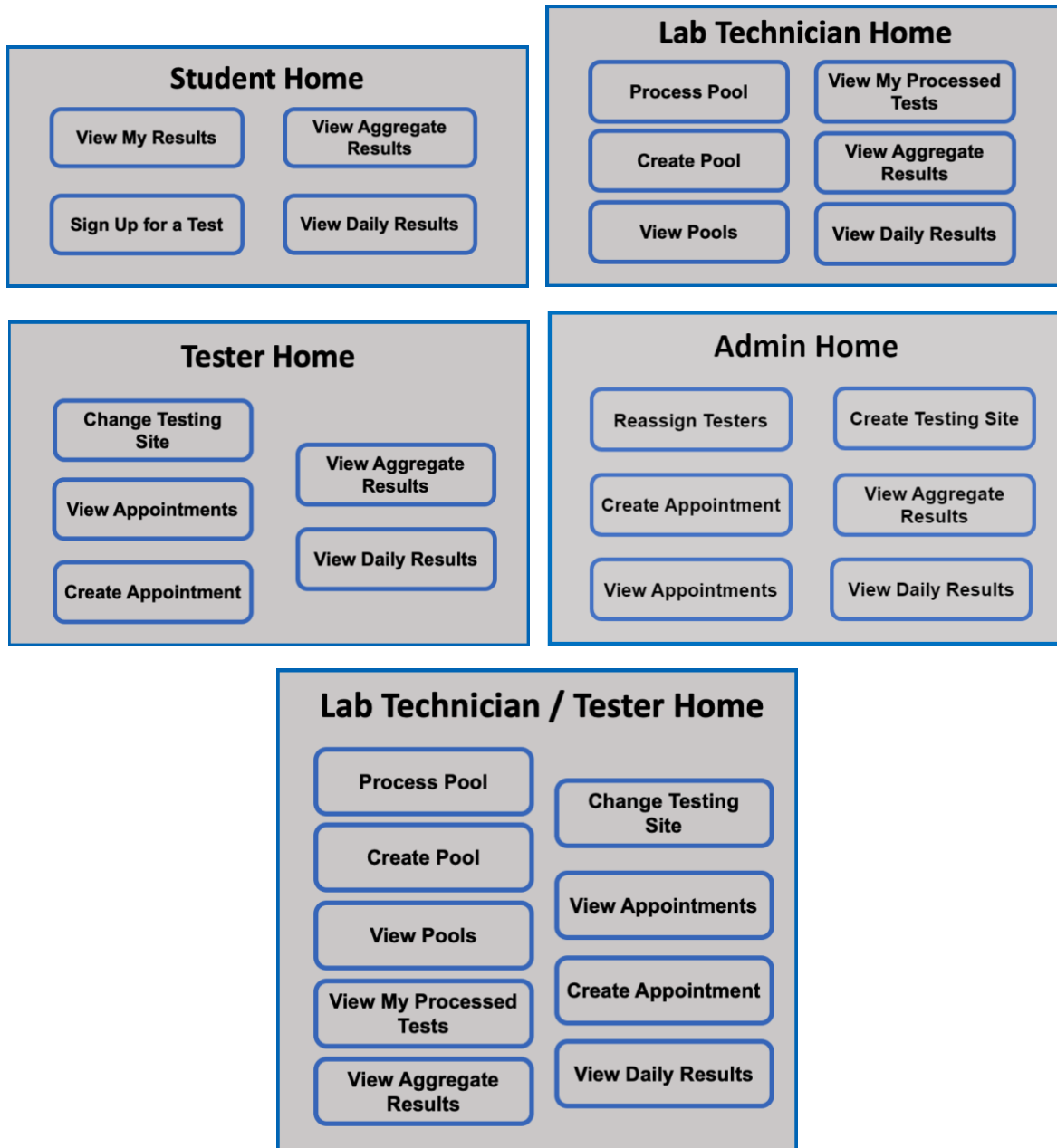
Register

Notes:

- 1) User will be registered as one of the following: "Student" or "Employee".
 - a) The student-specific and employee-specific fields should be mutually exclusive. In other words, you should not be able to fill them both in and hit register.
 - b) Employees must be either a site tester or a lab tech, but they can choose to be both.
 - c) Testers' testing site will be determined by an admin in "Reassign Tester" or by tester in "Tester Change Testing Site"
- 2) "Username" is unique for all users, the combination of "First Name" and "Last Name" is unique for all users.

- 3) "Username", "First Name", "Last Name", "Email", "Password", and "Confirm Password" are required for all users.
 - a) Store the hashed passwords instead of the literal passwords in the database.
- 4) Additional Constraints:
 - a) "Password" and "Confirm Password" should match for a valid registration.
 - i) Password must be at least 8 characters in size
 - b) If any fields, combinations, or constraints are invalid, registration must fail
 - c) "Email" must be in the form of _____@_____.
 - i) Minimum of 5 characters and a maximum of 25 characters

Screen 3: Home Screen(s)



Notes:

1. This screen will look different depending on which type of user is logged in
2. A student can:
 - a. View all their test results
 - b. Get tested/sign up for a timeslot
 - c. View aggregate test results
 - d. View daily test results
3. A Lab Technician can:
 - a. Process a pool

- b. Create a pool
 - c. View all pools
 - d. View tests I have processed
 - e. View aggregate test results
 - f. View daily test results
- 4. A Tester can:
 - a. Change their testing site
 - b. View appointments for the site they work at
 - c. Create an appointment for their testing site
 - d. View aggregate test results
 - e. View daily test results
- 5. Admin can:
 - a. Create available timeslots
 - b. View all appointments created so far
 - c. Reassign testers to a testing site
 - d. [Create a new testing site](#)
 - e. View aggregate test results
 - f. View daily test results
- 6. A Lab Tech/Tester can:
 - a. Do any functionality associated with a Lab Technician or a Tester

Screen 4: Student View Test Results

Student View Test Results

Status: Timeslot Date: -

Test ID#	Timeslot Date	Date Processed	Pool Status	Status
1	8/19/20	8/20/20	Negative	Negative
2	8/24/20	8/24/20	Positive	Negative
3	8/18/20	8/28/20	Positive	Positive
4	9/1/20	NULL	Pending	Pending

Notes

- Test IDs will link to the specific test screen (screen 5) for that test if the test has been processed.
- Test status (& status dropdown) includes all, negative, positive or pending.
- Test IDs will be unique among all tests.
- System Notes
 - Student is known

Screen 5: Explore Test Result

Explore Test Result

Test ID#	1
Date Tested	8/19/20
Timeslot	2:00 PM
Testing Location	West Campus
Date Processed	8/20/20
Pooled Result	Positive
Individual Result	Negative
Processed By	Bob Waters

Back (Home)

Notes:

- This screen will not be available until the test has been processed in the lab.
- “Processed by” is the lab technician who processed the pool and test
- System Notes
 - Test ID is known

Screen 6: Aggregate Test Results

Aggregate Test Results

Location: ▼ Housing: ▼ Testing Site: ▼

Date Processed: -

Total	7000	100%
Positive	450	6.43%
Negative	6550	93.57%
Pending	0	0%

Notes:

- The user can filter by student's location, student's housing, testing site of the test, or date the test was processed in the lab.
- The data represented should only be the tests within the specified filter. The total test count represents the total tests within the filter, and the total percentage will always be 100%. The percentages underneath will be the percentages with respect to tests only within the filter.
- The Date filter will reference the date tests were *processed*, NOT the date a test was *conducted*.
 - If the upper bound date filter is provided, then all pending tests should be filtered out, as they have not yet been processed.
 - Though, if *only* the lower bound filter is provided, all pending tests should be included, as they do satisfy the user's filter.

Screen 7: Signup for a Test

Signup for a Test

Testing Site: ▼ Date: - Time: -

▲▼ Date	▲▼ Time	Site Address	▲▼ Test Site	Signup
8/17/20	10:00 am	169 5th St	Bobby Dodd	<input type="radio"/>
8/17/20	11:00 am	169 5th St	Bobby Dodd	<input checked="" type="radio"/>
8/17/20	12:00 pm	1 Techwood Dr	ECHO	<input type="radio"/>
8/17/20	1:00 pm	543 Northpole	North Pole	<input type="radio"/>

Notes:

1. This screen allows students to sign up for a testing appointment.
2. A student should only be presented with testing sites that are located in their residing campus location. In other words, a student living on west campus should not be able to see or sign up for testing sites on east campus.
3. The address in the table only requires the street address
4. A user can only have one active (pending) signup. A user must wait for the result of their most recent test before signing up for a new test. If a user already has a pending test, sign up functionality should be disabled.
5. Note that we are only simulating tests, so as soon as a student signs up for an appointment, you can assume that a sample is also collected and ready to be processed.
6. System Notes
 - a. Signed in user is known
 - b. This screen uses radio buttons to enforce that a student can only sign up for one test at a time, but your screen can use something else as long as the functionality is the same.

Screen 8: Lab Tech Tests Processed

Lab Tech Tests Processed

Date Tested: -

Test Result: ▼

Test ID#	Pool ID	Date Tested	Date Processed	Result
1	22332	8/17/20	8/29/20	Negative
2	22332	8/24/20	8/29/20	Positive
3	22332	8/28/20	8/29/20	Positive
4	44554	9/1/20	9/1/20	Positive

Notes:

1. This screen should allow a lab technician to view the information for all the tests that they specifically have processed
2. A lab technician should be able to filter the table on the test date range and test result.
3. Clicking on the pool ID should take you to the "Explore Pool Result" screen for the given pool.
4. System Notes
 - a. Lab Tech is known

Screen 9: View Pools

View Pools

Date Processed: - Pool Status: ▼

Processed By:

Pool ID	Test Ids	▲▼ Date Processed	▲▼ Processed By	▲▼ Pool Status
22332	1,2,3	8/18/20	jim123	Negative
33443	4,5,6	8/25/20	gburdell1	Negative
45678	10,11	8/28/20	sasha10	Positive
54321	12	NULL	NULL	Pending

Notes:

1. This screen should allow a lab technician to view information for all pools.
2. A lab technician should be able to filter the results based on the **date processed**, pool status, or pool processor.
 - a. If a “processed by” filter is given, any pool that was processed by a lab tech whose username contains the “processed by” input should be included. If this filter is given, then all pending pools should be excluded, since they would not have a “processed by” attribute yet.
 - b. If the upper bound date filter is provided, then all pending pools should be filtered out, as they have not yet been processed.
 - c. Though, if *only* the lower bound filter is provided, all pending pools should be included, as they do satisfy the user’s filter.
3. Clicking on the pool id of a processed pool should take the user to the “Explore Pool Result” screen for that particular pool. Clicking on the pool id of a pending pool should take the user to the “Process Pool” screen for that particular pool.

Screen 10: Create a Pool

Create a Pool

Pool ID:

Test ID#	Date Tested	Include in Pool
1	8/17/20	<input checked="" type="checkbox"/>
2	8/17/20	<input checked="" type="checkbox"/>
3	8/18/20	<input checked="" type="checkbox"/>
4	8/20/20	<input checked="" type="checkbox"/>
5	8/24/20	<input type="checkbox"/>
6	8/28/20	<input type="checkbox"/>
7	9/1/20	<input type="checkbox"/>

Notes:

1. This screen allows for the grouping of unpooled tests into a new pool.
2. Pool ID must be a unique integer for each pool.
3. Each pool must be created with at least 1 test and at most 7 tests.
4. There is no functionality to edit which tests are in a pool after the creation of a pool.

Screen 11: View Pool

Process Pool

Pool ID: 1234

Date Processed: 9/2/20

Pool Status:

Positive	Negative															
<table><thead><tr><th>Test ID#</th><th>Date Tested</th><th>Test Result</th></tr></thead><tbody><tr><td>1</td><td>8/17/20</td><td>Positive ▼</td></tr><tr><td>2</td><td>8/24/20</td><td>Negative ▼</td></tr><tr><td>3</td><td>8/28/20</td><td>Negative ▼</td></tr><tr><td>4</td><td>9/1/20</td><td>Positive ▼</td></tr></tbody></table>		Test ID#	Date Tested	Test Result	1	8/17/20	Positive ▼	2	8/24/20	Negative ▼	3	8/28/20	Negative ▼	4	9/1/20	Positive ▼
Test ID#	Date Tested	Test Result														
1	8/17/20	Positive ▼														
2	8/24/20	Negative ▼														
3	8/28/20	Negative ▼														
4	9/1/20	Positive ▼														

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Process Pool

Pool ID: 1234

Date Processed: 9/2/20

Pool Status:

Positive	Negative															
<table><thead><tr><th>Test ID#</th><th>Date Tested</th><th>Test Result</th></tr></thead><tbody><tr><td>1</td><td>8/17/20</td><td>Negative</td></tr><tr><td>2</td><td>8/24/20</td><td>Negative</td></tr><tr><td>3</td><td>8/28/20</td><td>Negative</td></tr><tr><td>4</td><td>9/1/20</td><td>Negative</td></tr></tbody></table>		Test ID#	Date Tested	Test Result	1	8/17/20	Negative	2	8/24/20	Negative	3	8/28/20	Negative	4	9/1/20	Negative
Test ID#	Date Tested	Test Result														
1	8/17/20	Negative														
2	8/24/20	Negative														
3	8/28/20	Negative														
4	9/1/20	Negative														

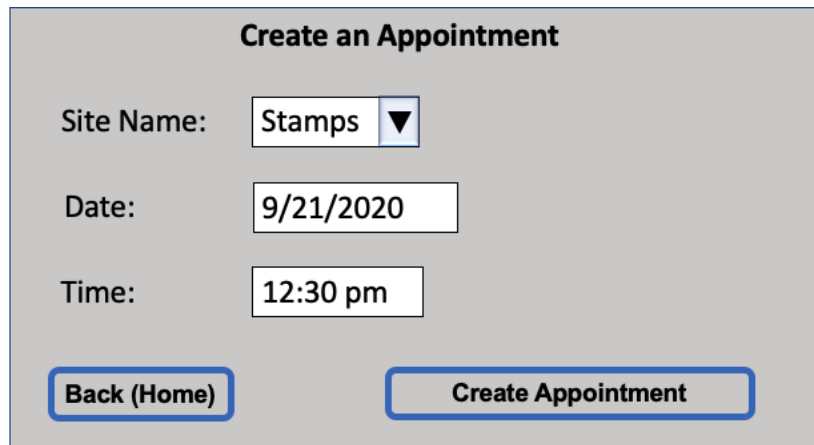
[Back \(Home\)](#)[Process Pool](#)

Notes:

1. The lab technician should enter the processed date and the pool's status (positive or negative)
2. If pool result is positive, a lab technician has to manually update each individual's test result after "retesting" their sample by selecting from their specific drop-down lists.

- a. Note, we are just simulating the idea of retesting the sample. This will all be done at the same time. The pool status and individual test statuses will be updated simultaneously.
2. If pool result is negative, all tests within the pool should also be assigned a negative result.
3. The processed date of the pool must be after the latest timeslot date of the tests within the pool.
3. System Notes:
 - a. Pool ID is known
 - b. Lab Tech is known

Screen 12: Create an Appointment



Create an Appointment

Site Name:

Date:

Time:

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Notes:

1. All fields are required
2. The Date and Time of the appointment must be unique for the testing site it is being created for.
3. A testing site can only have 10 x (number of assigned testers) appointments open in a single day.
For example, if Stamps has 2 testers assigned to it, it can only support 20 appointments in a day.
4. If you are a tester, you can only create appointments for the site you work at.
5. If you are an admin, you can create appointments for any site in the system.
4. System Notes:
 - a. User logged in and their status is known

Screen 13: View Appointments

View Appointments

Testing Site: ▼

Date: - Time: -

Availability: ☐ Show booked only
☐ Show available only
☒ Show all

▲▼ Date	▲▼ Time	▲▼ Test Site	▲▼ Location	▲▼ User
8/17/20	10:00 am	Bobby Dodd	East	student1
8/17/20	11:00 am	Bobby Dodd	East	--
8/17/20	12:00 pm	ECHO	East	student2
8/17/20	1:00 pm	North Pole	West	--

Notes:

1. This screen is for an Admin or a Tester to view appointments in the system.
2. This can be filtered by the testing site, test date, test time, and availability of the appointment.
 - a. If a user is signed up for an appointment, that implies it's booked. Otherwise, it's available.

Screen 14: Reassign Tester

Reassign Tester

Username	Name	Phone Number	Assigned Sites
dmcstuffins7	Doc McStuffins	1234567890	<div><div>X</div> Caddell</div> <div><div>X</div> ECHO</div> <div><div>X</div> Bobby Dodd</div> <div><div>+</div> Scheller</div>
jdoe381	Jane Doe	0987654321	<div><div>+</div></div>
akarev16	Alex Karev	1236547890	<div><div>+</div> Bobby Dodd</div>
sstranger11	Stephen Stange	3216540987	<div><div>+</div></div>

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Update

Notes:

1. This screen is for an Admin to assign or reassign testers to testing sites.
2. Only an Admin can access this screen
3. All Testers who register into the system are initially unassigned.
4. The "Name" column displays first and last names.
5. A testing site must have one or more testers, and a tester may be stationed at one or more testing sites
6. The Admin should not be able to reassign testers in such a way that a testing site is left without a tester
7. When the admin opens the screen, the table (even the "assigned sites" column) should represent the current state of the database.
8. The dropdowns for the "Assign Site" column display the names of all existing testing sites minus the ones the tester is already assigned to
9. Only when the "update" button is clicked should the database be updated with the changes the admin made on this screen. For example, clicking the "+" or the "X" should only tell you *which* updates to make but the actual "update" button will commit the update to the database.

Screen 15: Create a Testing Site

Create a Testing Site

Site Name

Stamps

Street Address

740 Ferst Drive

City

Atlanta

State

GA

▼

Zip Code

30332

Location

West

▼

Site Tester

Tester One

▼

Back (Home)

Create Site

Notes:

1. All fields are required.
2. The name of each testing site should be unique
3. "Address" consists of street address, city, state, and zip code
4. A zip code consists of 5 digits.
5. The dropdown list for "Site Tester" should display the first and last names of eligible testers.
6. The tester being assigned to the new testing site must already exist in the system and cannot already be assigned to a testing site. A site cannot be created without at least one tester.

Screen 16: Explore Pool Result

Explore Pool Result

Pool Metadata

Pool ID	22332
Date Processed	8/29/20
Pooled Result	Positive
Processed By	Bob Waters

Tests In Pool

Test ID#	Date Tested	Testing Site	Test Result
1	8/17/20	Bobby Dodd	Negative
2	8/24/20	Bobby Dodd	Positive
3	8/28/20	ECHO	Positive

[Back \(Home\)](#)

Notes:

- This screen allows the user to look into an already processed pool.
- This screen will not be available until the pool has been processed.
- “Processed by” is the lab technician who processed the pool
- Tests shown should only include tests in the selected pool

Screen 17: Tester Change Testing Site

Tester Change Testing Site

Username	dmcstuffins7
Full Name	Doc McStuffins
Assigned Sites	<div><div>X</div>Caddell</div> <div><div>X</div>ECHO</div> <div><div>X</div>Bobby Dodd</div> <div><div>+</div><div>Scheller</div><div>▼</div></div>

Back (Home)

Update

Notes:

1. Testers can use this screen to change their testing site.
2. All Testers who register into the system are initially unassigned.
3. A testing site must have one or more testers, and a tester may be stationed at one or more testing sites
4. The dropdown for the "Testing Site" should display the names of all existing testing sites as well as an "Unassigned" entry. The dropdown should default to the current value for this attribute for this tester.
5. A testing site cannot be left without a tester.
6. When the tester opens the screen, the table (even the "assigned sites" row) should represent the current state of the database.
7. The dropdowns for the "Assign Site" row display the names of all existing testing sites minus the ones the tester is already assigned to
8. Only when the "update" button is clicked should the database be updated with the changes made on this screen. For example, clicking the "+" or the "X" should only tell you *which* updates to make but the actual "update" button will commit the update to the database.

Screen 18: View Daily Results

View Daily Results			
Date	Tests Processed	Positive Count	Positive Percent
9/1/20	100	5	5.00%
9/2/20	200	10	5.00%
9/3/20	100	10	10.00%
9/7/20	400	20	5.00%
9/10/20	100	8	8.00%

[Back \(Home\)](#)

Notes:

1. This screen shows testing statistics grouped by processing date
2. Only dates in which tests were processed should appear as rows here
3. Positive count reflects the positive tests that were processed on the given day
4. Positive percentage reflects the percent of tests processed on the given day that were positive