

Login Screen:

The login screen of the system where the user needs to enter their username and password to log in.

By clicking the LOGIN button, the user will log in to the system and be taken to the next screen. There is an option for "Forgot Password" in case the user forgets their password.



Instructor Menu Screen:

When an instructor logs into the system, they are presented with an initial display of their workspace where they can interact with one of the buttons displayed on the left side of the screen.

At the top right of the screen, the text Welcome "___" with the name of the connected instructor appears.

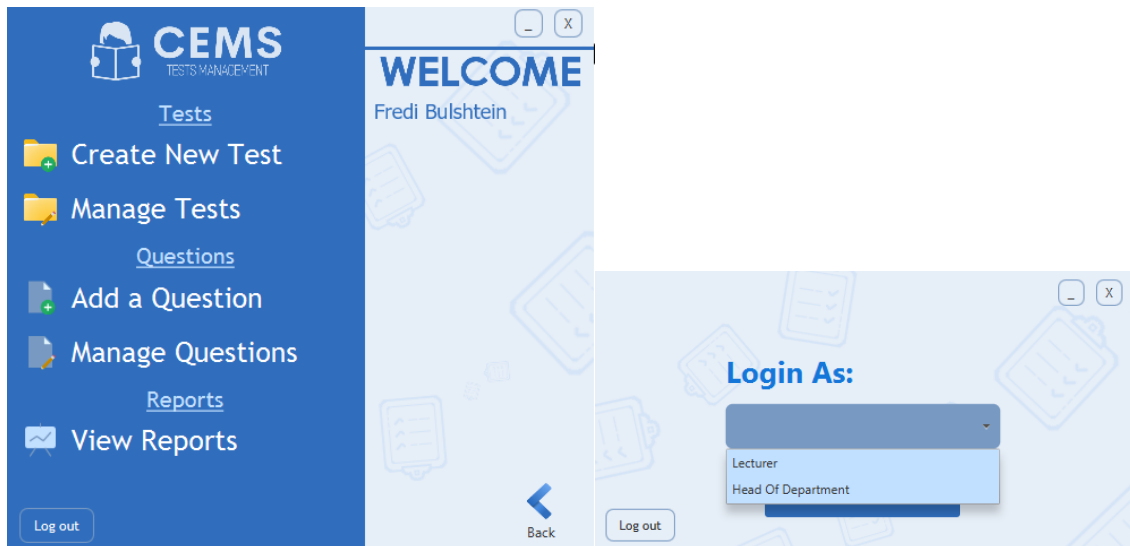
At the bottom left of the screen, there is a LOGOUT button through which the user can log out of the system at any time.

The screen displays a menu with 5 options for actions. Note that when hovering over the desired button, the button changes its size and becomes more prominent than the other buttons:

Create New Test – Clicking the button will take the user to a new screen of "Create New Test".

Manage Tests – Clicking this button will take the user to a new screen of "Manage Tests".
Add a Question – Clicking this button will take the user to a screen of "Create a New Question".
Manage Questions – Clicking the button will take the user to a new screen of "Manage Question Bank".
View Reports – Clicking this button will take the user to a new screen containing "View Statistical Reports" of the system.

According to comments during the prototype task: A department head type user who connects to the system and chooses to log in as an instructor will move to the instructor's menu screen where an additional button has been added to return to role selection:



To create a test, the instructor must first create questions and enter them into the "Question Bank".

New Question Addition Screen:

CEMS TESTS MANAGEMENT **Add a new question**

May Logout

Subject: Course:

Question Number: Question ID:

Question:

Answers:

1.
2.
3.
4.


Correct Answer: ☐

[Back](#) [Save](#)

At the top of the screen, the instructor is presented with a selection of subjects and courses (from the subjects and courses belonging to them). After selecting each one, the instructor is shown the question number and the identifier number of the question in the bank.

In the Question Answer sections, the instructor enters free text for the question and the answers. The instructor must also specify the correct answer to the question at the bottom of the screen. After filling in all the details, click the Save button to save the question in the bank.

Below is an example of correctly filling in the data and saving the question:



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Add a new question

Subject:

Course:

Question Number:

Question ID:

Question:

$X+2=9$
 $x+8=15$
 $X=?$

Answers:


1.


2.

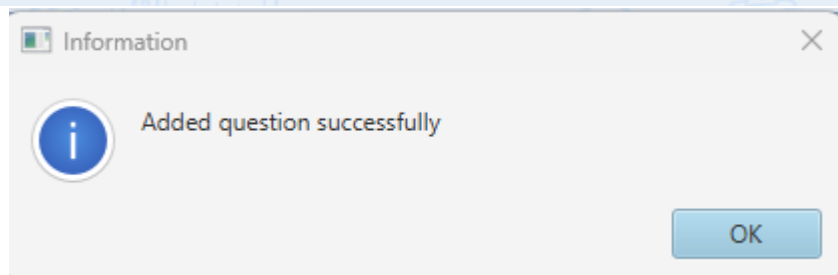
3.

4.

Correct Answer:

 Back

 Save



After clicking Save or if the instructor decides to click the Manage Questions button, the opening window for the instructor is the question management page which includes the question bank.

Instructor's Question Bank Screen:

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Questions Management

May Logout

Search a question Add Question

*Double click on a question to update it

| Question Number | ID | Subject | Course Name | Question Text | Author |
|-----------------|--------|---------|-------------|--|-----------|
| 2 | 010102 | 01 | Algebra | $2 \times 2 = ?$ | May Caspi |
| 3 | 010103 | 01 | Algebra | $3 \times 3 = ?$ | May Caspi |
| 29 | 010129 | 01 | Algebra | $X + 2 = 9$ $x + 8 = 15$ $X = ?$ | May Caspi |
| 6 | 010106 | 01 | Algebra | What is the value of x in the equation $2x + 5 = \dots$ | May Caspi |
| 7 | 010107 | 01 | Algebra | Which of the following expressions is equivalent to $2(x + 3) - 4$? | May Caspi |
| 8 | 010108 | 01 | Algebra | What is the value of $3 + 2x$ when $x = 4$? | May Caspi |
| 5 | 010205 | 01 | Hedva | The answer is 1 | May Caspi |

Delete Edit

Back

In this window, you can search for a question by free text.

There is an Add Question button which allows us to move to the question creation page.

There is an Edit button to edit an existing question, and double-clicking on the question also takes us to the question page.

There is a Delete button which will delete the question from the database.

After the instructor clicks the Create New Test button on the main screen, the user is taken to the first page of test creation.

Step 1 Screen in Test Creation:

Due to the use of personas for an instructor-type user, we learned that each instructor teaches in one or more courses, so we created a more accessible page for selecting a specific course for which the instructor will create the test. On this page, the instructor's test details are also

displayed, and they are asked to fill in additional details.

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Enter Test Details

May Logout

*Click on the test's subject and course:

| Course Name | Subject Name |
|-------------|--------------|
| Algebra | Math |
| Hedva | Math |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Course ID: Test ID: Subject ID: Test Number:

Year: Semester: Test type:

Duration: Session:

Back Enter details Pick questions Add comments Pick questions

On this screen, the instructor is presented with the courses and subjects they teach. They must select from the table the course for which they want to create the test. After selecting the course details, the instructor is shown the test identifier number, the subject identifier number, and the test number automatically.

Now the instructor must fill in the details for the test in order to move to the next step where they choose questions (Pick question). They must fill in: year (as an integer), semester (A/B/C), exam duration (in minutes), and exam session (A/B). They must also choose whether the test is manual or computerized.

After filling in all the details, the instructor must click Pick Question to select questions to be included in the test.

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Enter Test Details

May

Logout

*Click on the test's subject and course:

| Course Name | Subject Name |
|-------------|--------------|
| Algebra | Math |
| Hedva | Math |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Course ID:

Test ID:

Subject ID:

Test Number:

Year:

Semester:

Test type:

Duration:

Session:

<

●
Enter details

2


—

○
Pick questions


3

>
Add comments
Pick questions

Step 2 Screen in Test Creation:


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Pick Questions


May

Logout

Question Database:

*Double click on a question to see full information on it

| Question Number | ID | Subject | Course Name | Question Text | Author |
|-----------------|--------|---------|-------------|---|-----------|
| 2 | 010102 | 01 | Algebra | 2X2=? | May Caspi |
| 3 | 010103 | 01 | Algebra | 3X3=? | May Caspi |
| 6 | 010106 | 01 | Algebra | What is the value of x in the equation 2x + 5 ... | May Caspi |
| 7 | 010107 | 01 | Algebra | Which of the following expressions is equival... | May Caspi |
| 8 | 010108 | 01 | Algebra | What is the value of 3 + 2x when x = 4? | May Caspi |
| 5 | 010205 | 01 | Hedva | The answer is 1 | May Caspi |
| 9 | 010209 | 01 | Hedva | The answer is 3 | May Caspi |

Add selected
Deselect

Points for Question :
Remaining points : 100

Selected Questions:

| Question Number | Question ID | Subject | Course Name | Question Text | Author | Points |
|---------------------|-------------|---------|-------------|---------------|--------|--------|
| No content in table | | | | | | |

Remove selected

1
3

Back
Enter details
Pick questions
Add comments
Add comments

Due to comments given during the prototype task and through the use of personas, it was clarified to the development team that one of the important uses for an instructor-type user in the system is to build a test in the most efficient and flexible way, both in terms of the number of questions and the scoring for each question.

On this page, a window is displayed for searching a question by free text.

The instructor is shown all the questions belonging to them by: identifier number, question number, course, subject, question text, and author. They are also shown the remaining points for the test.


To select a question, the instructor must mark it and then fill in the number of points for the question. Then click Add Selected to include the question in the current test.

The instructor can also remove a selected question from the test using Remove Selected by selecting the question from the Selected Question bank.

Assuming an instructor can build a test composed of many questions, it may be appropriate to replace a question with another to reduce search time from the Selected Question bank. There is a Deselect button that, by selecting a question from the Database and then clicking Deselect, the question will be removed from the Selected Question bank.

To complete the test creation, the instructor must click the Add Comments button, which takes the instructor to the comments addition page for instructors and students.

Below is an example of filling in the data for Step 2 in test creation:

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Pick Questions

MayLogout

Question Database:

*Double click on a question to see full information on it

Search a question

| Question Number | ID | Subject | Course Name | Question Text | Author |
|-----------------|--------|---------|-------------|---|-----------|
| 2 | 010102 | 01 | Algebra | 2X2=? | May Caspi |
| 3 | 010103 | 01 | Algebra | 3X3=? | May Caspi |
| 6 | 010106 | 01 | Algebra | What is the value of x in the equation 2x + 5 ... | May Caspi |
| 7 | 010107 | 01 | Algebra | Which of the following expressions is equival... | May Caspi |
| 8 | 010108 | 01 | Algebra | What is the value of 3 + 2x when x = 4? | May Caspi |
| 5 | 010205 | 01 | Hedva | The answer is 1 | May Caspi |
| 9 | 010209 | 01 | Hedva | The answer is 3 | May Caspi |

Add selectedDeselect

Points for Question :10Remaining points :0

Selected Questions:

| Question Number | Question ID | Subject | Course Name | Question Text | Author | Points |
|-----------------|-------------|---------|-------------|------------------------|-----------|--------|
| 8 | 010108 | 01 | Algebra | What is the value o... | May Caspi | 25 |
| 7 | 010107 | 01 | Algebra | Which of the follo... | May Caspi | 25 |
| 6 | 010106 | 01 | Algebra | What is the value o... | May Caspi | 40 |
| 2 | 010102 | 01 | Algebra | 2X2=? | May Caspi | 10 |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Remove selected

123

BackEnter detailsPick questionsAdd commentsAdd comments

Step 3 Screen in Test Creation:

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Add Notes

May

Lecturer Note: Enter notes for lecturers...

Student Note: Enter notes for the students...

Back

1 Enter details 2 Pick questions Add comments


Submit

On this screen, the instructor is shown 2 fields for filling in comments: the upper one for instructors and the lower one for students.

To complete the test creation process, click Submit. In each of the test creation windows, the instructor can click the Back button which returns them to the previous page in the test creation process.


After clicking Submit to save the test or by clicking on Test Management in the main menu, the instructor will move to the test management page that belongs to them.

Below is an example of filling in the data for Step 3 in test creation:



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Add Notes


 May

Lecturer Note:

Good Job!

Student Note:

Good Luck!

Back


1

Enter details

2

Pick questions

Add comments

Submit

Continuing with the requirements of the system users, we built a page for instructors to manage tests which displays all the tests belonging to them. This page allows the instructor to make a test available to students. When a test becomes available, the instructor sees the test in the "tests in progress" table on the right and can select this test (or another currently being conducted by them) and click the view test button to see the status of the test and even lock or request an extension of time.

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TESTS MANAGEMENT

Tests Management

Search test by course name Create New Test Logout

Tests Database:

| Test Num... | ID | Subject | Course Name | Year | Semester | Session | Author |
|-------------|--------|---------|-------------|------|----------|---------|-----------|
| 01 | 010101 | Math | Algebra | 2020 | A | B | May Caspi |
| 18 | 010118 | Math | Algebra | 2017 | B | B | May Caspi |
| 19 | 010119 | Math | Algebra | 2023 | B | B | May Caspi |
| 06 | 010206 | Math | Hedva | 2019 | A | B | May Caspi |
| 17 | 010217 | Math | Hedva | 1998 | A | A | May Caspi |

Delete Edit Activate Test

Tests waiting for approval:

| Student ID | Test ID | Course | Semester | Session | Grade | Approved |
|---------------------|---------|--------|----------|---------|-------|----------|
| No content in table | | | | | | |

View Test Results

Tests in progress:

| ID | Starting Time | Test Code |
|---------------------|---------------|-----------|
| No content in table | | |

View Test

Back

On this page, the instructor can search for a test by free text of the course name. They can create a new test by clicking on Create New Test which takes them to the new test creation page.

To activate a test (make it available to students), click on a test from the test bank and then on the Active Test button which creates an available code for the test and activates the test for students. Additionally, on this page, there is a Delete button for deleting a test by clicking on a specific test and then clicking Delete, and an Edit button for moving to the test editing page. Once a test becomes active, it is added to the Test in progress table. By selecting a test from the available tests table and clicking view test, the instructor receives real-time information about the active test and can lock the test and request an extension of time from the department head.

Test Reports Viewing Screen for Instructor:

As a result of the use of personas, it was found that searching for a specific test in the table for an instructor who has been teaching for many years is not convenient. We built a more accessible page that allows filtering by year and semester to view a statistical report on a test.

After filtering, the instructor is shown all tests by year and semester with their details (test number, course, semester, and year) in the table.

When the instructor clicks on View Reports in the main menu, they will move to the screen:

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Report Selection

Select Year Select Semester

*Double click on a Report to see full information on it

| Year | Semester | Subject ID | Course | Test ID |
|------|----------|------------|---------|---------|
| 2020 | A | 01 | Algebra | 010101 |
| 2017 | B | 01 | Algebra | 010118 |
| 2023 | B | 01 | Algebra | 010119 |
| 1998 | A | 01 | Hedva | 010217 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Back Show Report

On this screen, the instructor is shown all reports on tests. Filtering can be done by selecting year and semester.

Double-clicking on a specific test or selecting it and clicking the Show Report button will open an additional page that includes all the content of the statistical report. According to comments given by instructors during the prototype task, we presented on this page all the data for the

