MATLAB EXPO 2018

Cody Coursework Workshop

Auto-Evaluation Framework for MATLAB Assignments

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Before we start – a few questions

- How do you test learning of concepts?
- Which are courses with most potential for use of MATLAB?
- How do you typically evaluate code submitted by students?
- Is evaluation of code time-consuming?
- How would you ideally like to be using your time?
- How do you keep your students engaged?

Choose a problem in your field

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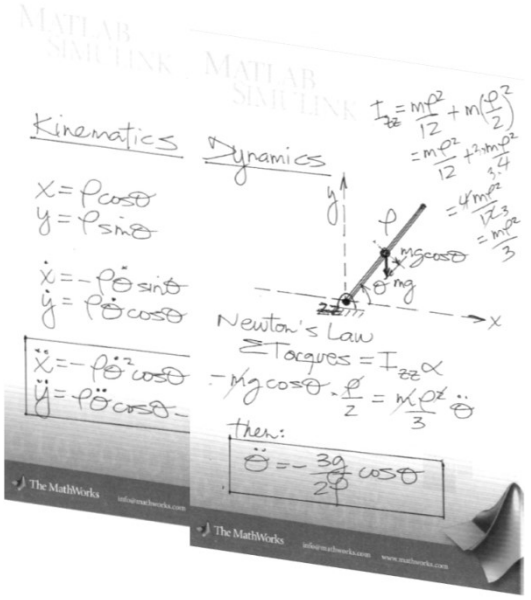
  - Electrical and Electronics – Signal Generation
  - Mechanical – Mass Spring Damper
  - Mathematics – Numerical Integration



- What is the expected solution?

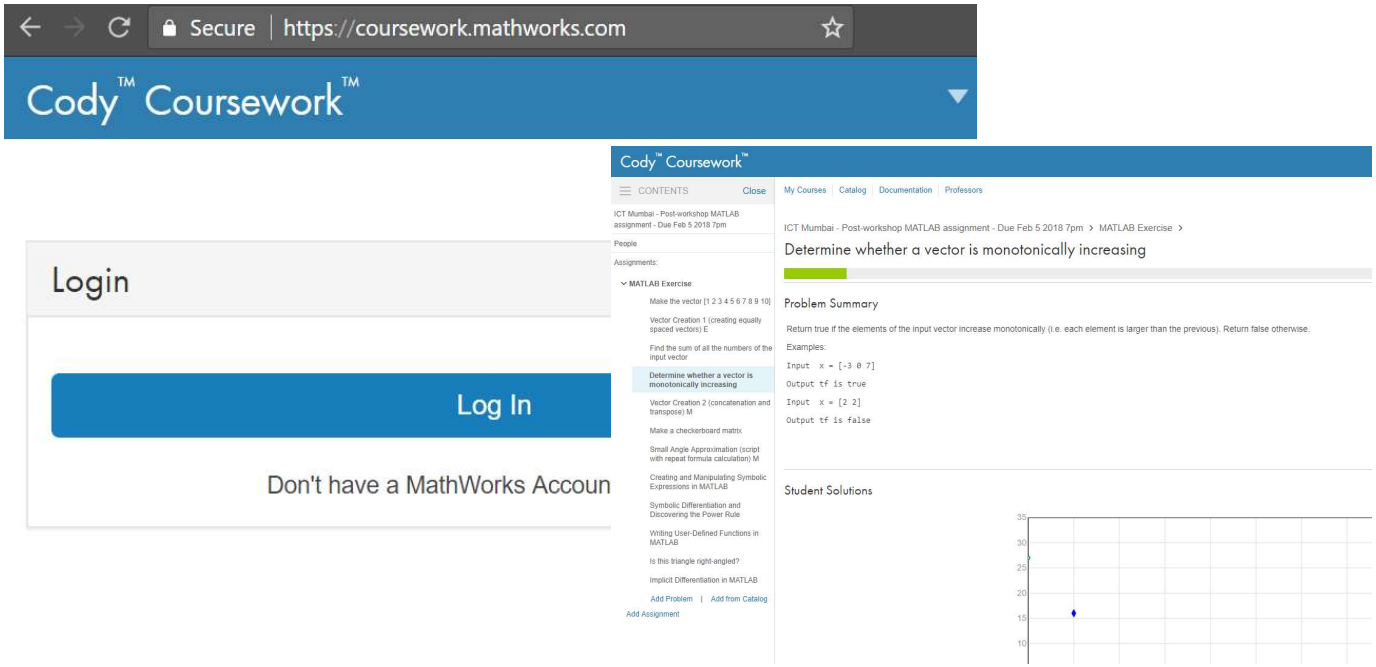
- **How do you check the solution for correctness? – Give test cases**

Agenda

- Cody Coursework – Introduction
- Walkthrough
  - Student – Solving the assignment
  - Faculty - Setting up the course and the assignment
- Hands-on Experience

What is Cody Coursework?

- Cody Coursework helps faculty automate evaluation/grading of MATLAB programming assignments



Cody Coursework

- Visual environment for creating MATLAB problem sets
- Allows instructors to set up MATLAB assignments and automatically evaluate/grade them
- Allows students to test their solutions against the computer obtaining immediate feedback

Potential for usage in:

Homework assignments

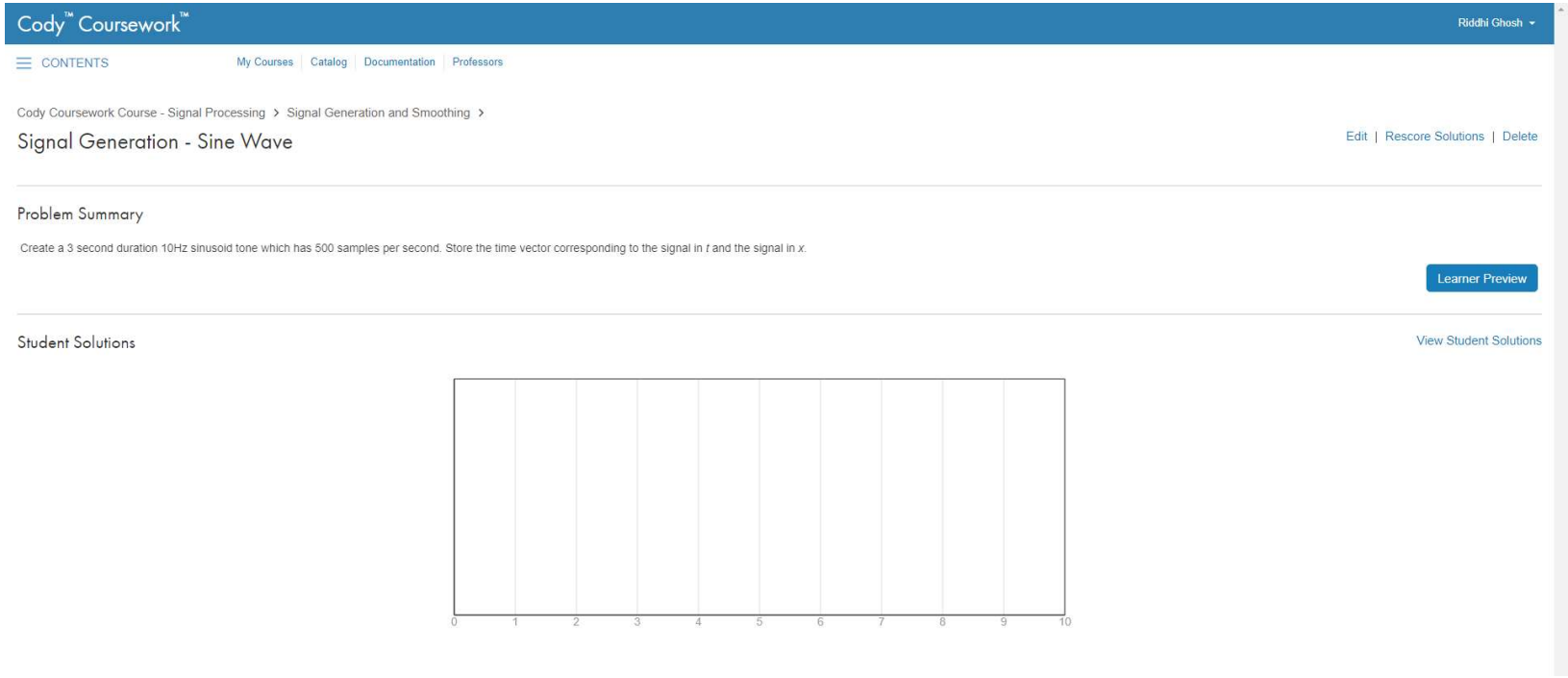
Exams

Practical sessions

Many others (e.g., learn MATLAB, share problems)

A Walkthrough

https://coursework.mathworks.com



Workflow

Faculty creates a course in Cody Coursework

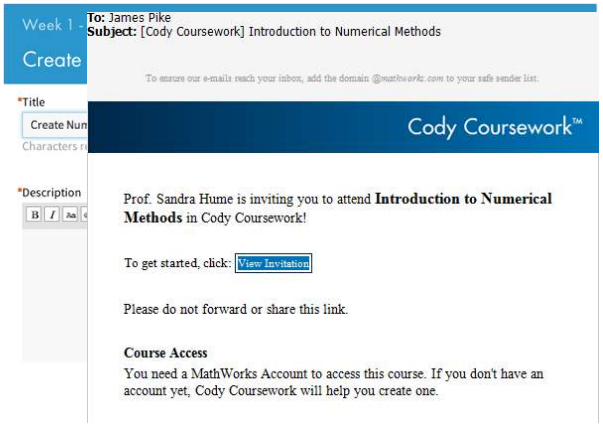
- Assignments with Problem Sets
- Invites Students to the course

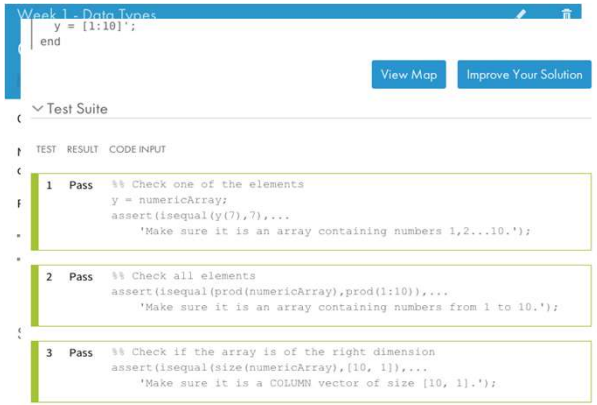
Student receives an email with an invite to the course

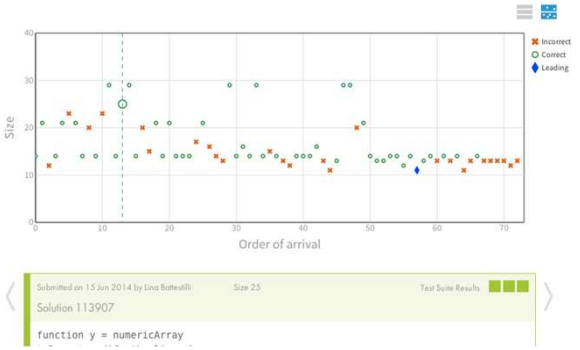
- Assignments with problems sets due on a particular date
- Students solves the problems, gets instant feedback and submits the assignment

Learning analytics

- Faculty is able to see how many students attempted the problems in the assignment, how many got it correct, number of attempts
- Faculty also able to download the MATLAB code submitted and the submission data in CSV format







Key points to be noted

https://coursework.mathworks.com

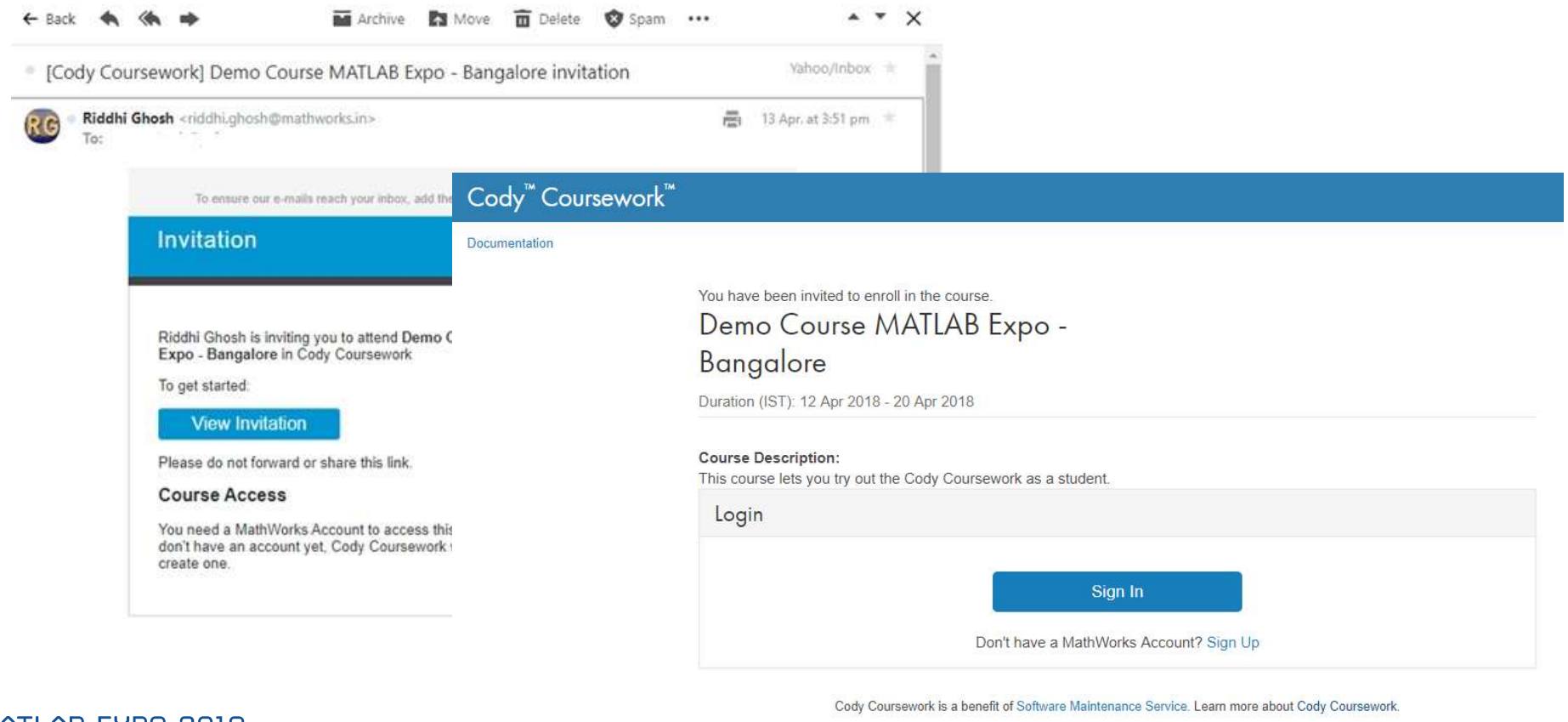
MathWorks hosted

Runs a cloud version of MATLAB – No local installation of MATLAB necessary

Cody Coursework – Student Workflow

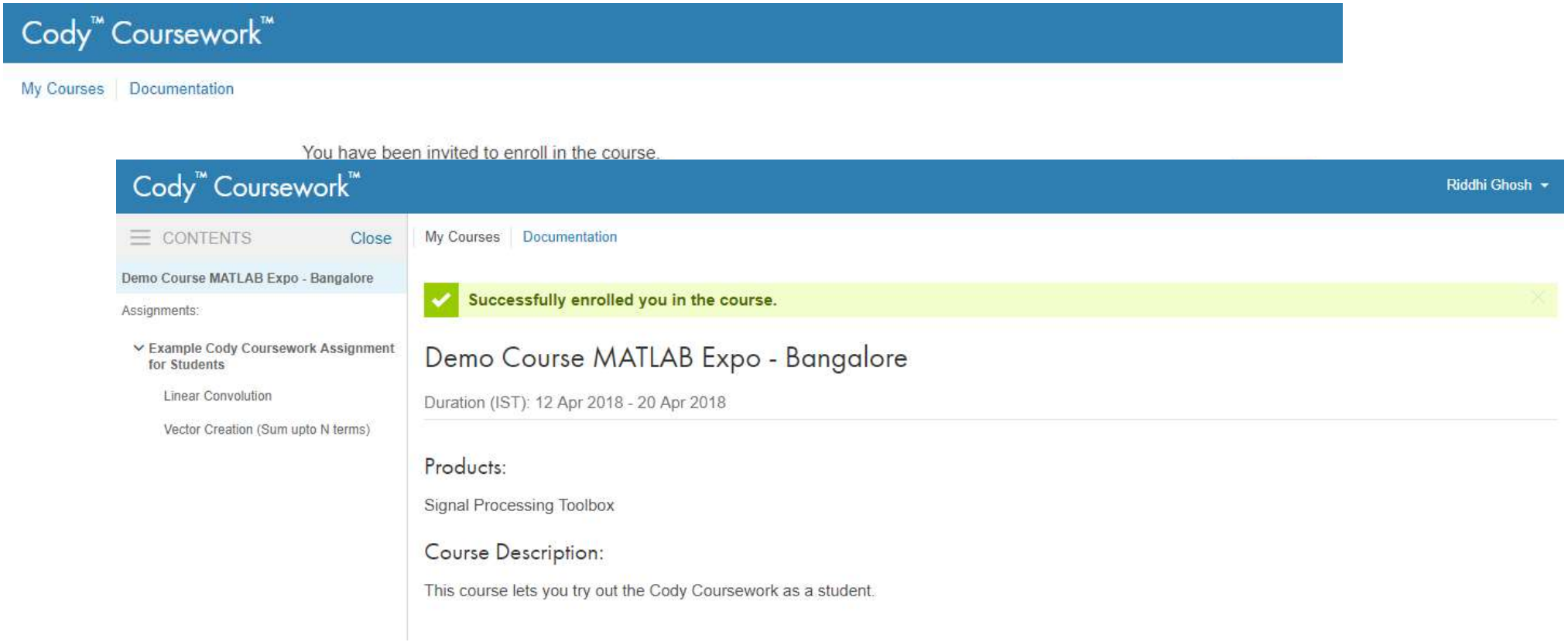
Cody Coursework – Student Workflow

1. Receive an Invitation



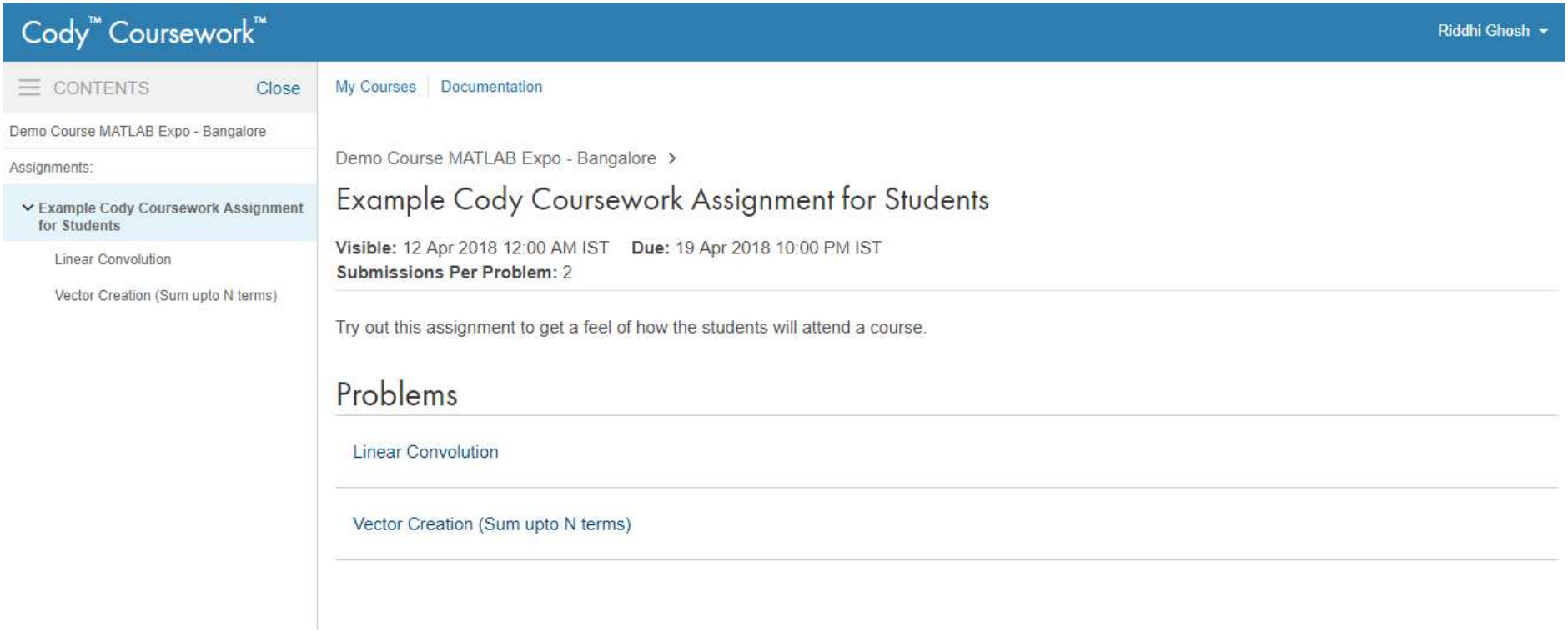
Cody Coursework – Student Workflow

2. Enroll



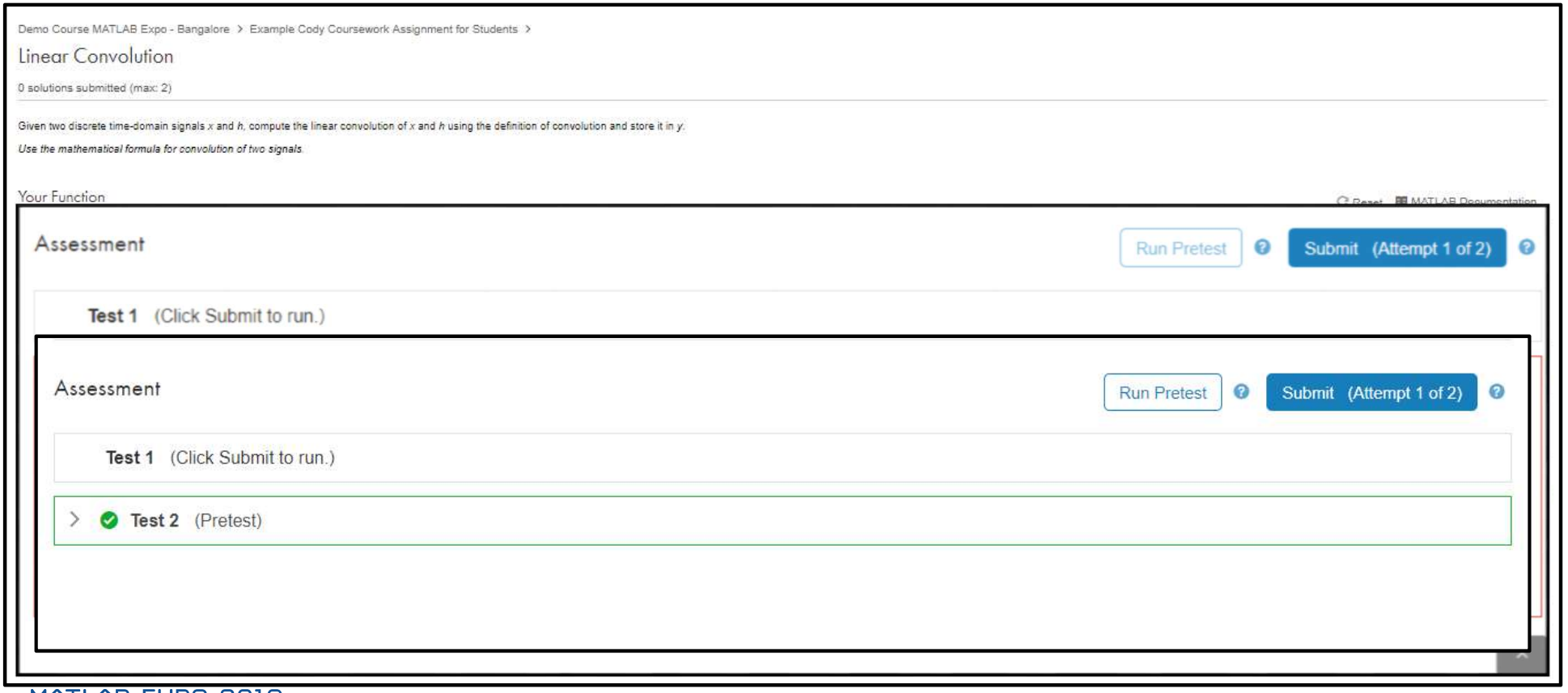
Cody Coursework – Student Workflow

3. Open an Assignment



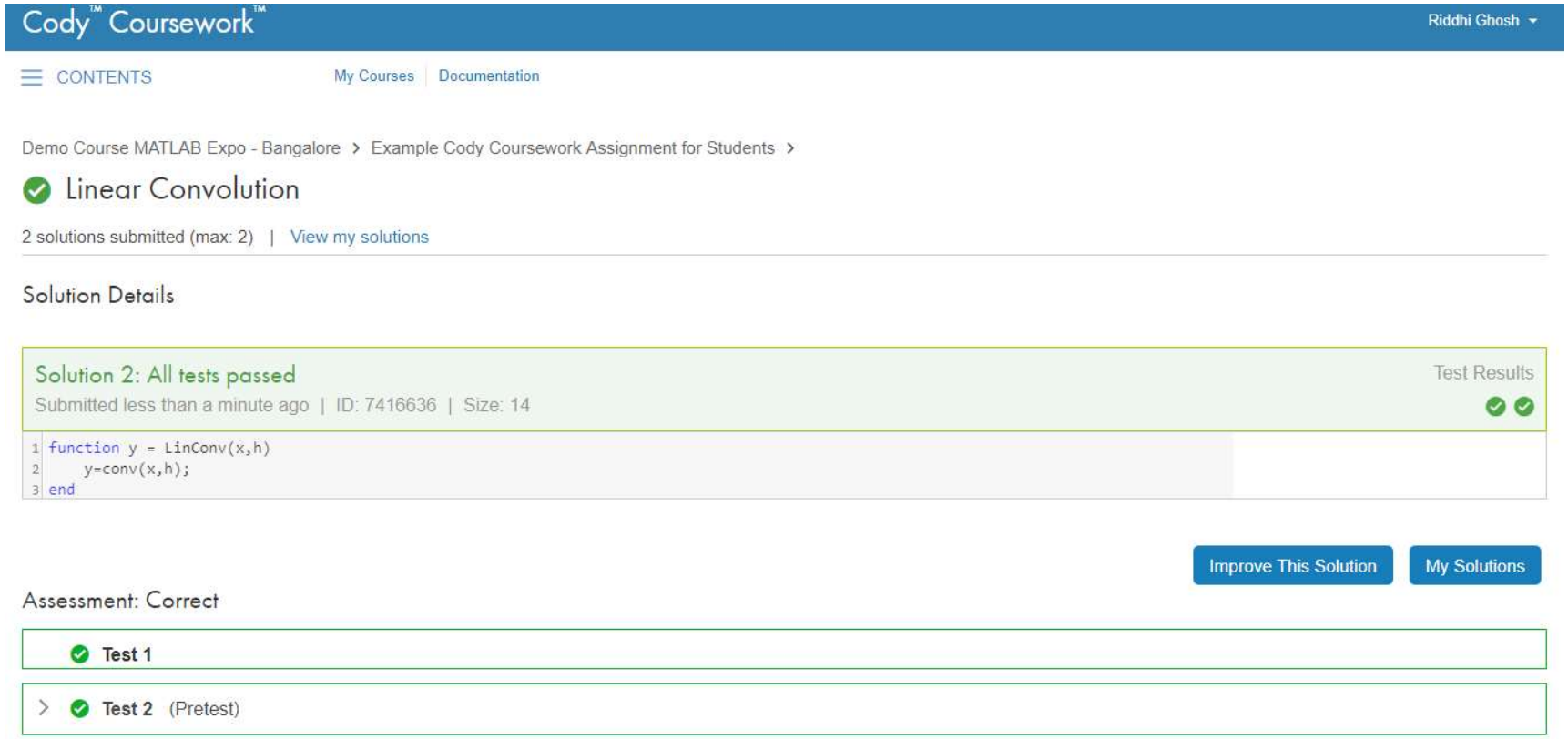
Cody Coursework – Student Workflow

4. Solve Problems



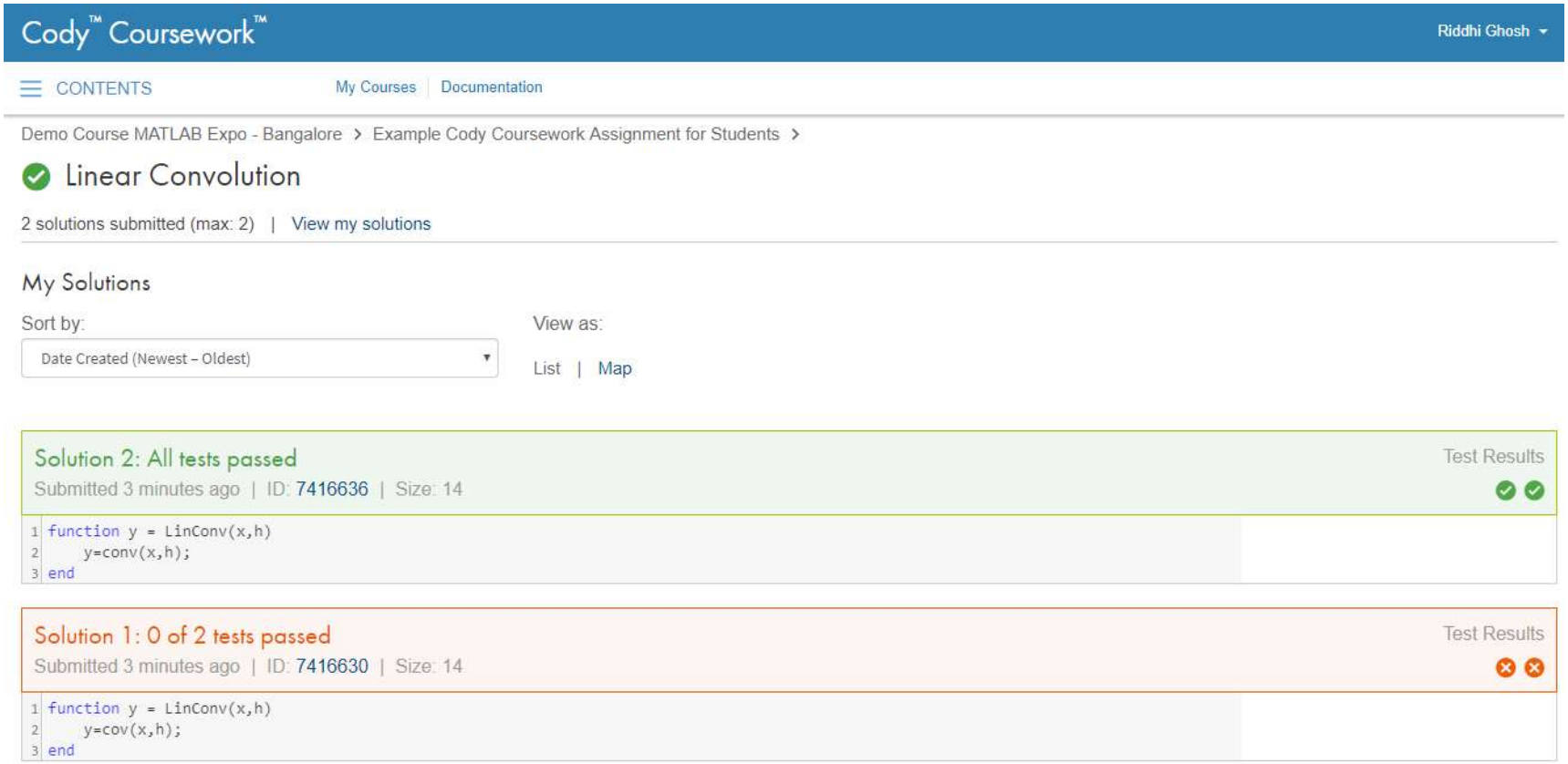
Cody Coursework – Student Workflow

5. Submit Solutions

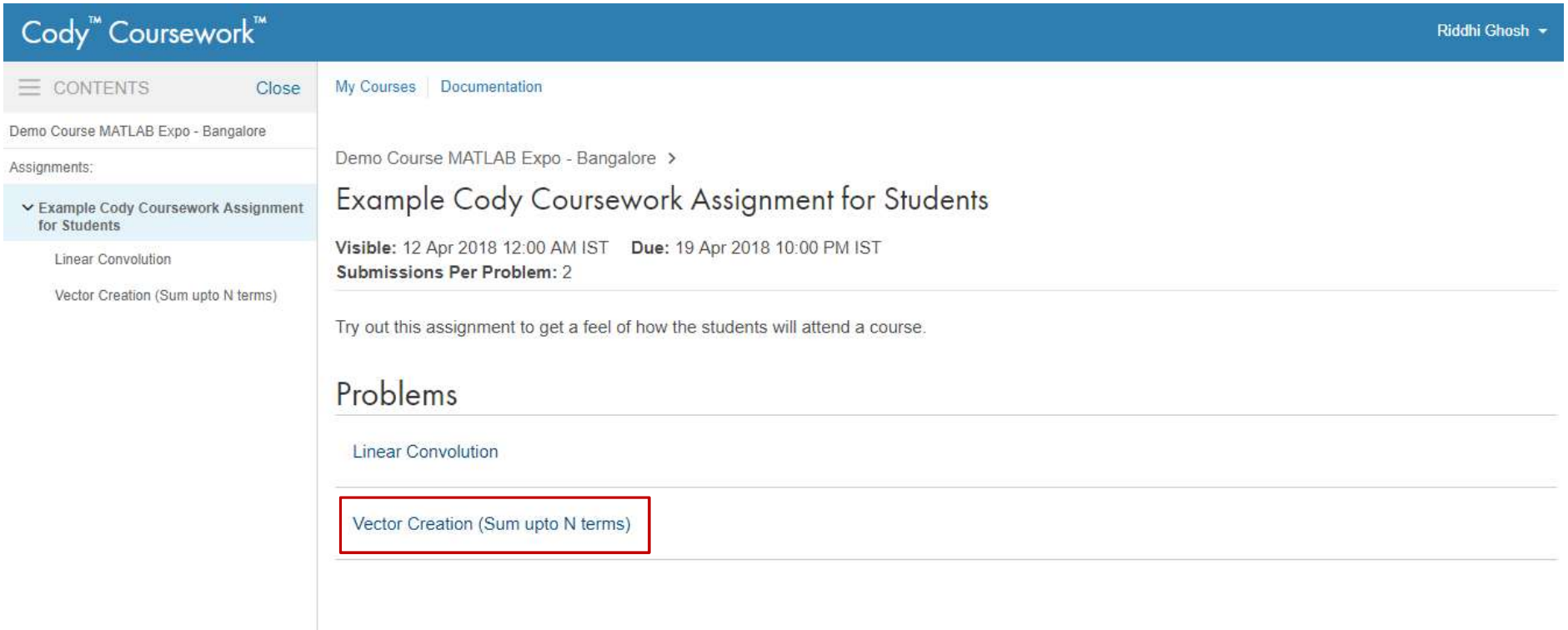


Cody Coursework – Student Workflow

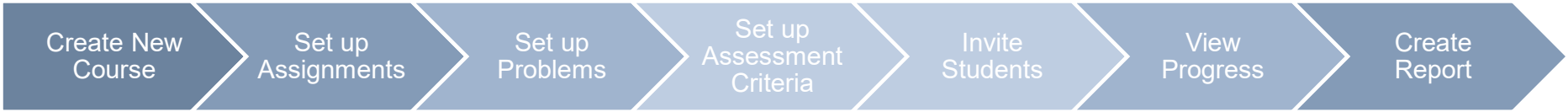
6. Check Progress

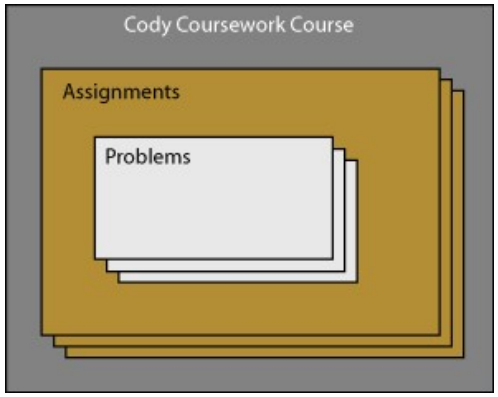


Cody Coursework – Student Workflow



Cody Coursework – Instructor Workflow

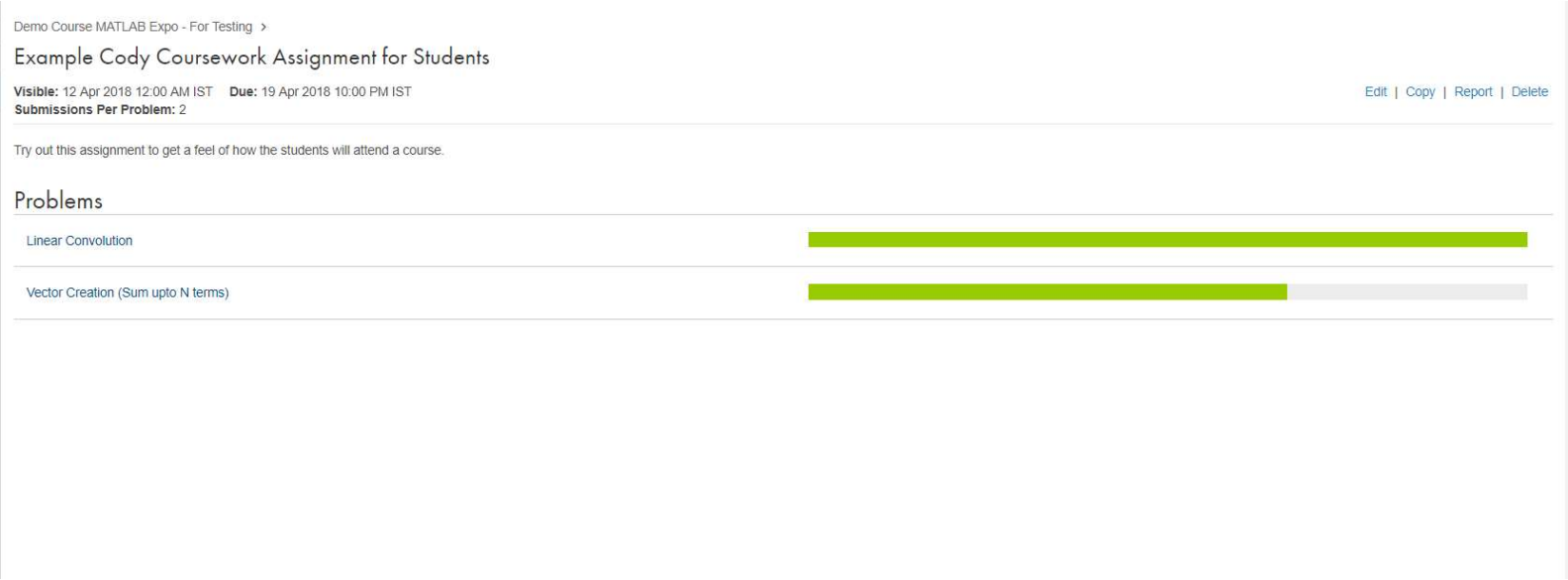




Course Setup Demo

Cody Coursework – Assessment Workflow

Student Submissions



Cody Coursework – Assessment Workflow

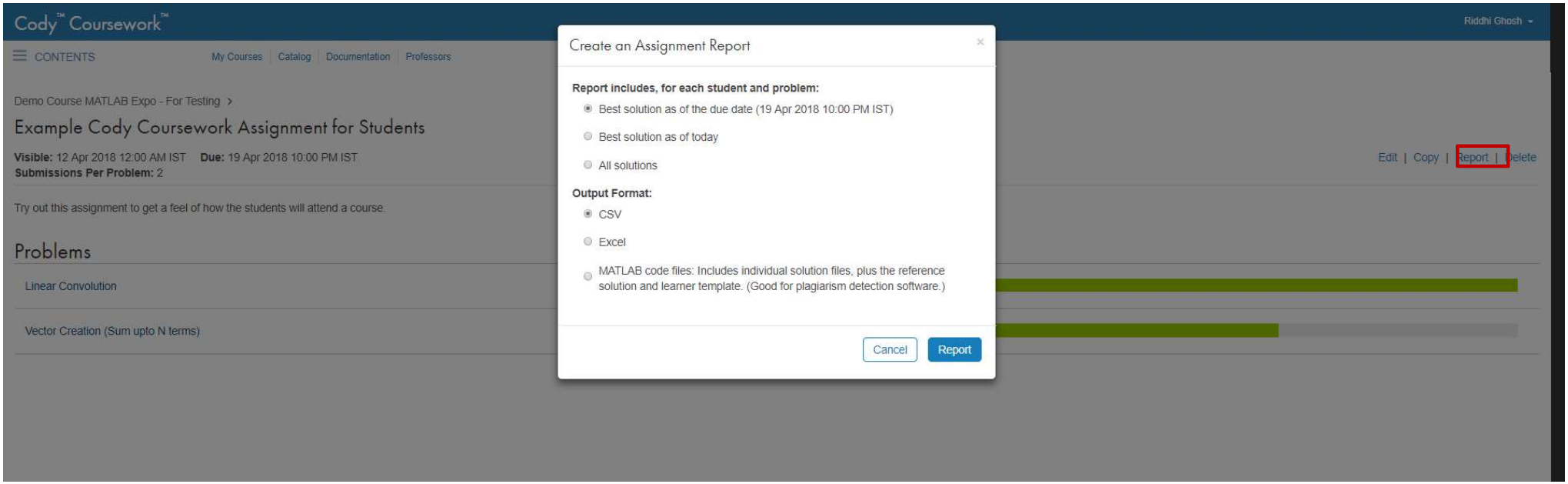
Solutions Map

Cody Coursework – Assessment Workflow

Rescore Solutions

Cody Coursework – Assessment Workflow

Create Reports



Cody Coursework - Benefits

	Benefits
1. Auto-grade MATLAB Scripts and Functions	Saves time on grading
2. Immediate Student Feedback	Student engagement
3. Learning Analytics	Improves student learning outcomes

Resources

- https://coursework.mathworks.com/
- https://in.mathworks.com/academia/cody-coursework
- https://in.mathworks.com/videos/matlab-cody-coursework-setting-up-a-course-92602

Use Case at Technical University Eindhoven

- TU Eindhoven

Professor Quote: I am advocating for expanded use of Cody Coursework at TU/e. As some of my colleagues have already discovered, for any course that uses MATLAB, Cody Coursework is a highly effective tool that saves time and work and fully engages students in the course assignments.

- *"The fact that you can get immediate feedback (or confirmation) on a quite complicated piece of code is really neat, and without it, debugging your own code would really be a mess. It also **motivated me to get 100% score on all the MATLAB assignments**." Joost P.*

- *"Cody Coursework is a great platform. It gives me **more confidence about my solution** rather than waiting for the instructor evaluation.* " Manoj P.

- "*My experience with Cody Coursework was very positive. The **green checkboxes are an extra motivation to get a high grade**." Koen B.*

- *"The most useful feature of Cody Coursework was the ability to check our solutions against various test cases, which helped in **debugging our code and formulating it in a much more generalized manner**." Amrith V*

- *"I like that you receive feedback immediately, which makes it much easier to find problems in your code… I **learned a lot from the MATLAB assignments in a relative short period."** Ruud S.*

Call To Action

- Identify use of MATLAB in your coursework and assignments
- Look at Cody Coursework documentation to learn more about how to create a course
- Reach out to us if you need help setting up a course
  - Riddhi.Ghosh@mathworks.in
  - Ramanuja.Jagannathan@mathworks.in
  - Viju.Ravichandran@mathworks.in