

# An Introduction to Prutor

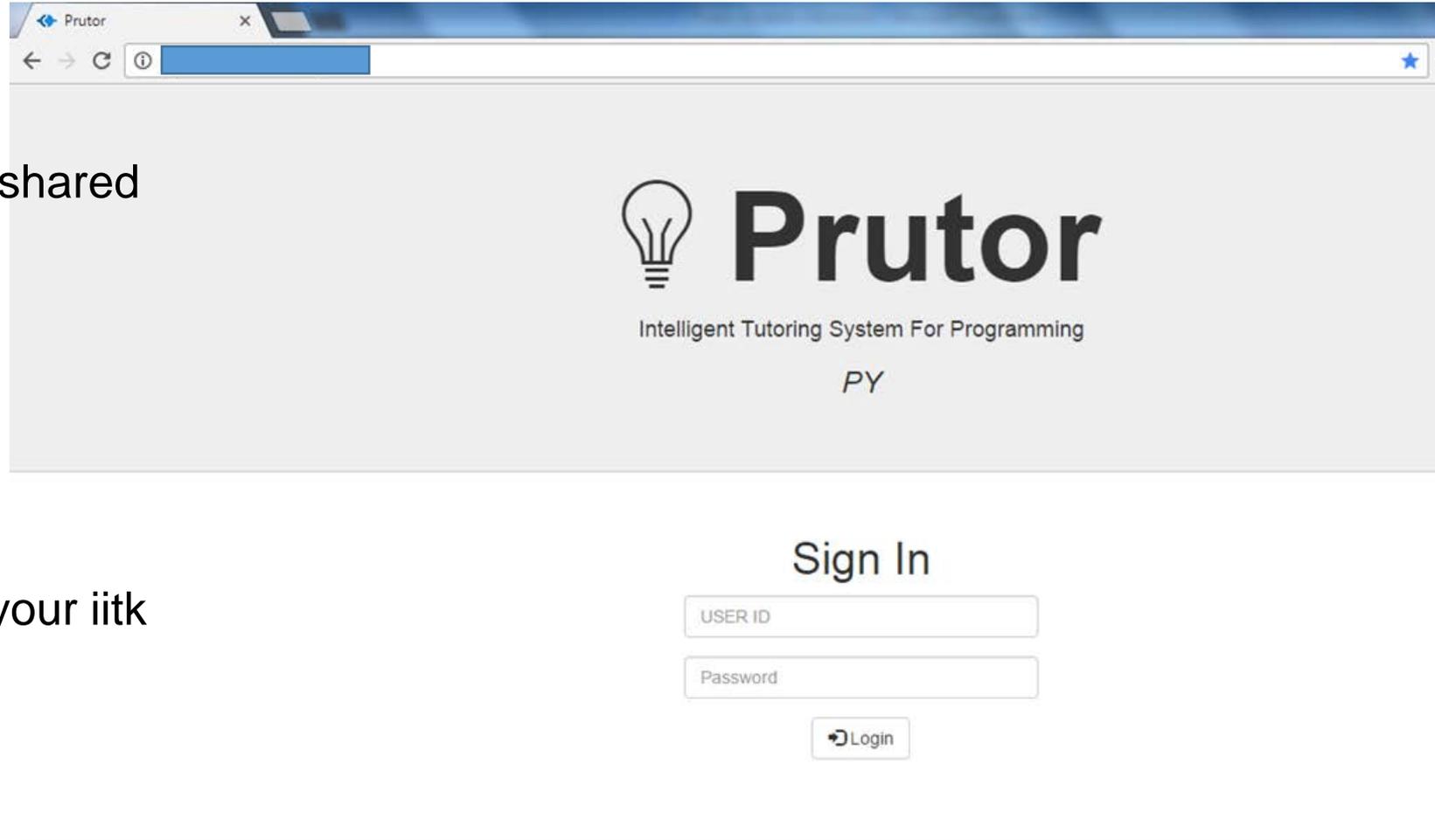
Online system for program preparation and submission

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# Login Page

- The details of the server will be shared with you separately
- For IIT Kanpur students:
- Your login id is your **iitk email-id**
  - **xyz@iitk.ac.in**
- Your password will be same as your iitk email password.



The screenshot shows a web browser window with the Prutor logo and a sign-in form. The logo consists of a lightbulb icon followed by the word "Prutor" in a large, bold, sans-serif font. Below the logo, the text "Intelligent Tutoring System For Programming" is displayed in a smaller font, followed by the letters "PY" in a stylized, italicized font. The sign-in form is centered on the page and includes a "Sign In" heading, a "USER ID" input field, a "Password" input field, and a "Login" button with a right-pointing arrow.

# Your Prutor Home

Your home shows you the

- **Events** Arena: Questions (i.e. problems for which you need to write programs)
- **Course Statistics** Arena: The status of you submissions
- **Grade Card** Arena
- **CodeBook** Arena: Your submitted programs
- **Practice** Arena
- **Scratchpad** Arena

The screenshot displays the Prutor CS101 home dashboard. At the top, there are navigation links for CodeBook, Practice, Scratchpad, and a user profile for Student 1. The main content is divided into two columns. The left column features an 'Ongoing Event' section for 'test1', which ends on Fri Jan 01 2016 at 21:53:00. Below this is a table of questions with their points, submission status, and a 'Start Coding' button. The right column contains 'Course Statistics' and 'Course Events' sections. The 'Course Problems' section shows 2 submitted and 3 not submitted problems. The 'Course Events' section shows 1 Lab, 0 Exams, and 0 Quizzes. At the bottom left, there is a 'GRADE CARD' button with a dropdown arrow.

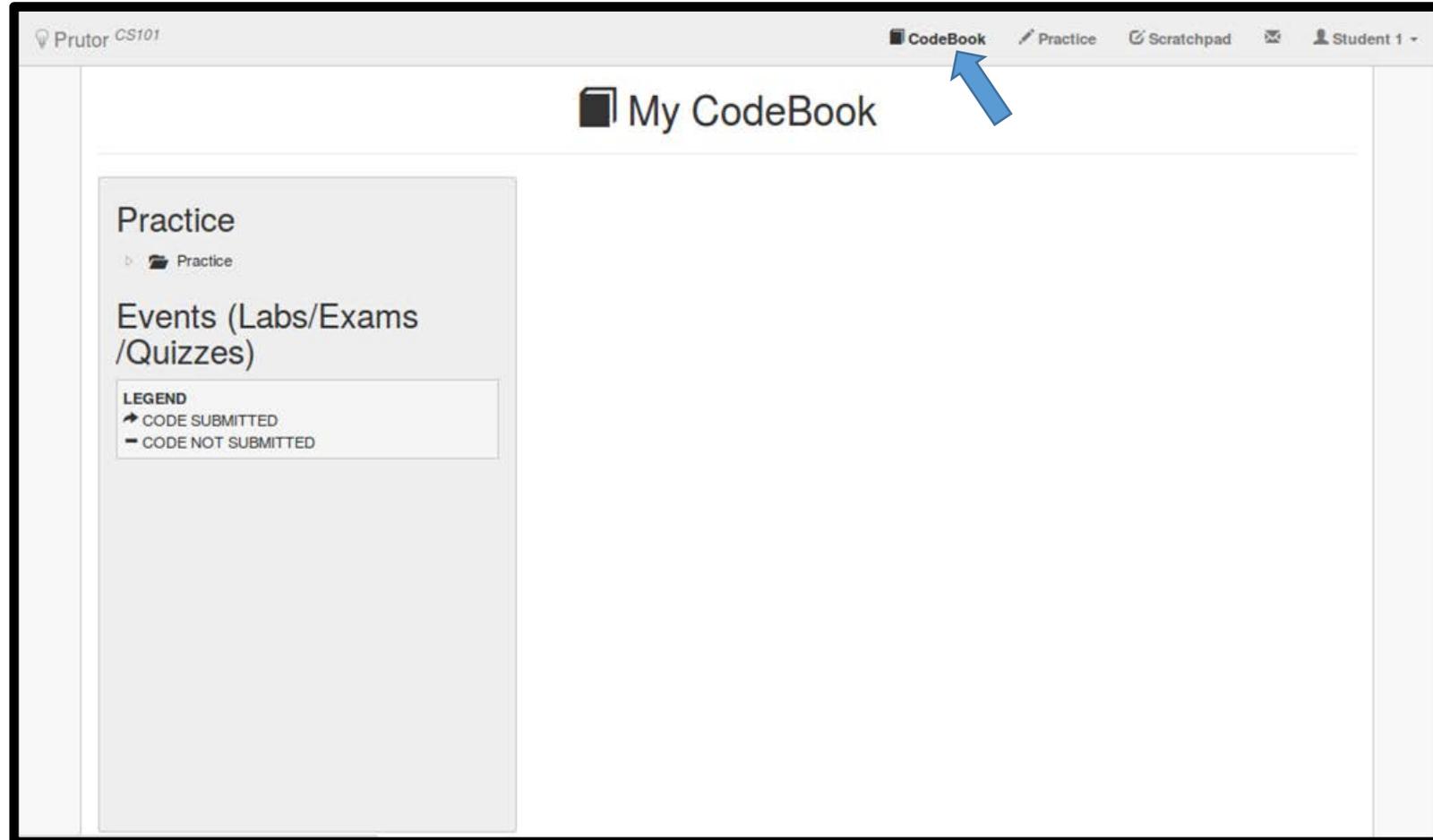
Q1	20 Points	submitted	Start Coding
Q1	20 Points	not-submitted	Start Coding
Q2	20 Points	submitted	Start Coding
Q3	20 Points	not-submitted	Start Coding
Q4	20 Points	not-submitted	Start Coding

Submitted	2
Not Submitted	3

Labs	1
Exams	0
Quizzes	0

# CodeBook Arena

- Here you can see all the problems submitted by you.
- In the picture on the right, the CodeBook is blank as the student has not submitted any question.



# Events Arena

- An **Event** is visible only when it is **Ongoing**
- In the picture on the right, the ongoing event is **test1**, which has five questions with 20 marks each
- Click on the **Start Coding** link to start solving the questions

Prutor CS101

CodeBook Practice Scratchpad Student 1 -

Ongoing Event

test1

Ends on Fri Jan 01 2016 at 21:53:00

Q1	20 Points	submitted ✓	Start Coding
Q1	20 Points	not-submitted	Start Coding
Q2	20 Points	submitted ✓	Start Coding
Q3	20 Points	not-submitted	Start Coding
Q4	20 Points	not-submitted	Start Coding

GRADE CARD

### Course Statistics

Course Problems

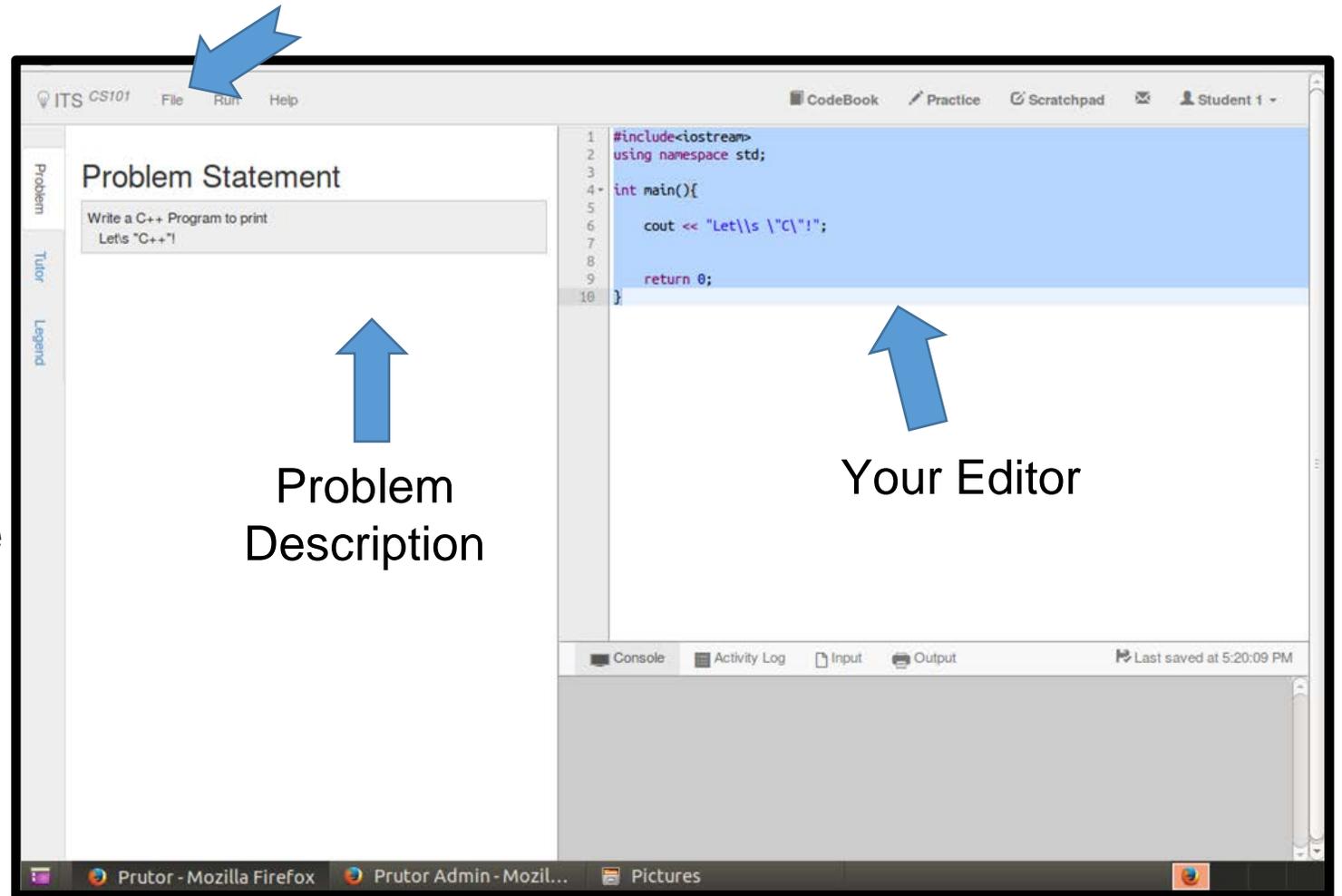
Submitted	2
Not Submitted	3

### Course Events

Labs	1
Exams	0
Quizzes	0

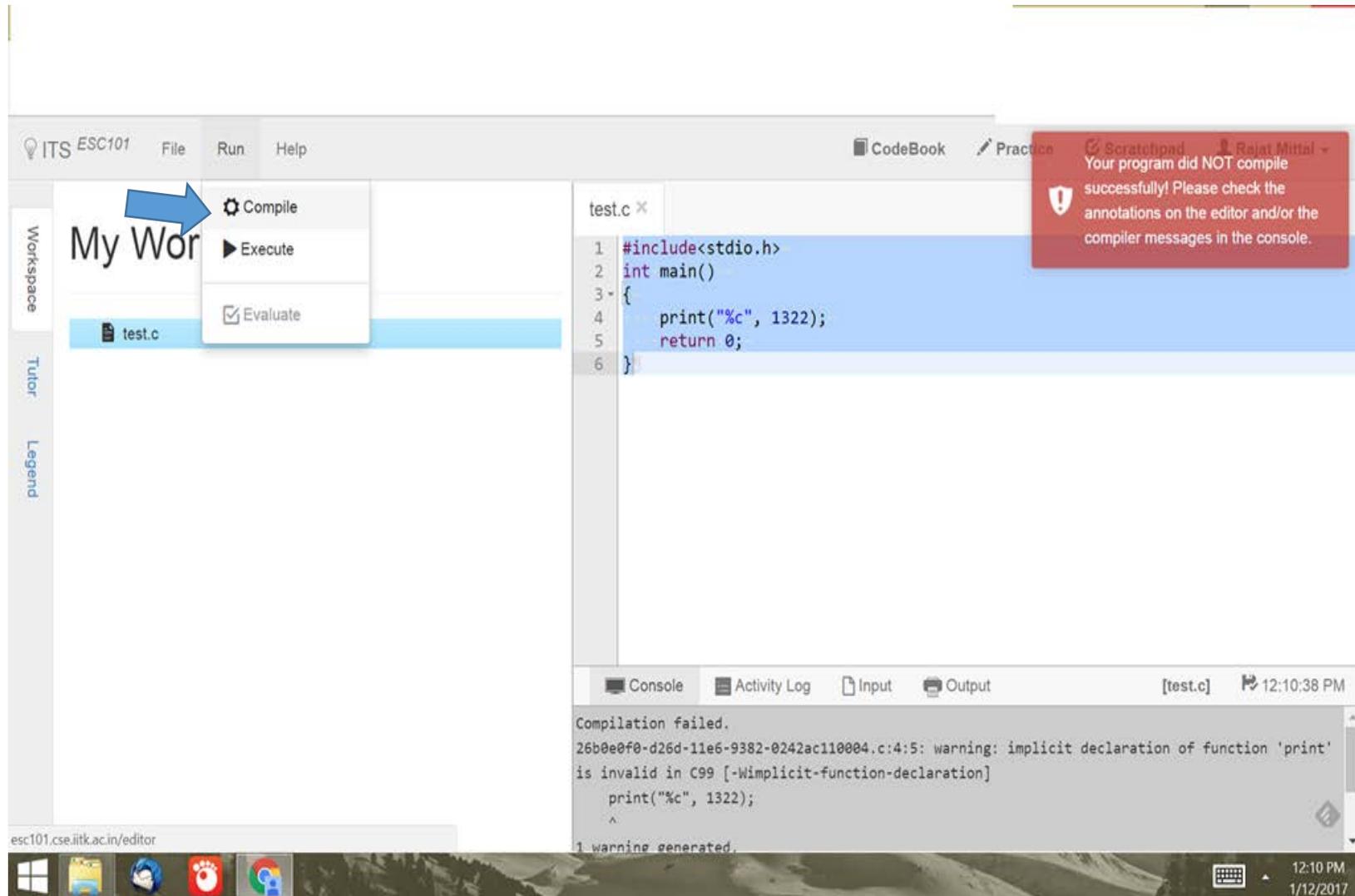
# Code Editor

- You reach here by clicking the **Start Coding** link of a question
- You can save your code by pressing **Ctrl-s**
- Or you can save using the **Save** option of the **File** tab
- The **Code Editor** saves your code every ~10 seconds



# Compiling Your Program

- Click on **Compile** option in the **Run** tab to execute the program.
- You can see the output of compilation in the console tab below your code.



# Executing Your Program

- Click on **Execute** option in the **Run** tab to execute the program
- If your program requires input data, then you need to **provide it before executing** the program.
- For providing the input, click on the **Input** tab below the **Code Editor** and enter the input as you expect it to be

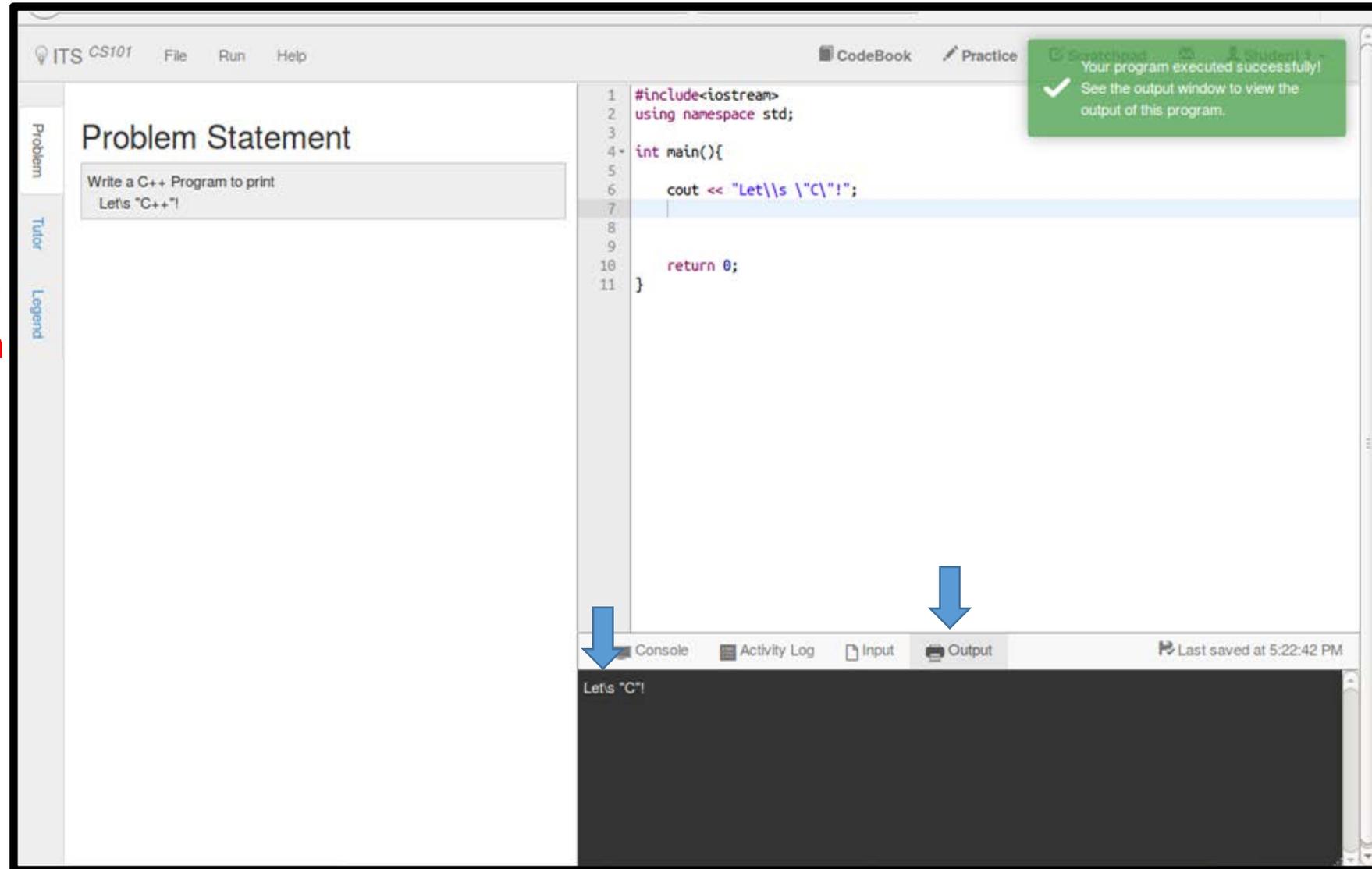
The screenshot displays the ITS PY IDE interface. The top menu bar includes 'File', 'Run', and 'Help'. The 'Run' menu is open, showing 'Execute' and 'Evaluate' options, with a blue arrow pointing to 'Execute'. The main workspace is divided into three sections: 'Problem', 'Tutor', and 'Legend'. The 'Problem' section contains text about leap years and examples. The 'Code Editor' on the right shows a Python script with a comment '# your code goes below.' and a blue arrow pointing to the 'Input' tab in the bottom right corner. The 'Input' tab is highlighted, and a red arrow points to it with the text 'Enter Input before executing'.

```
1 """  
2 @author: Demo T  
3 """  
4  
5 year=int(input())  
6 # your code goes below.
```

Enter Input before executing

# Viewing the Output

- After successful execution, a **green floating notification** will appear on the **top-right corner** and the output will be shown at the **bottom**



# Evaluating Your Program

- Click on the **Evaluate** option in the **Run** tab
- **Evaluation** refers to running the program on the test cases given by the instructor
- Evaluation Results are displayed on the left column heading **Tutor**
- You can see some test case but there may be some hidden test cases

The screenshot shows a programming IDE interface with the following components:

- Menu Bar:** ITS CS101, File, Run, Help. A blue arrow points to the **Run** menu.
- Code Editor:** Contains C++ code:

```
1 #include<iostream>
2 using namespace std;
3
4 int main(){
5
6     cout << "Let\\s \\s \"C\"!";
7
8
9
10    return 0;
11 }
```
- Notification:** A green box in the top right corner says: "Congratulations! Your program has passed all test cases. You can now submit this program."
- Tutor Panel (Left):** Shows the time 5:23:51 PM and an "Evaluation Results" table:

#	INPUT	EXPECTED OUTPUT	ACTUAL OUTPUT	
1		Let\s \"C\"!	Let\s \"C\"!	✓
- Message Box:** A light blue box below the table states: "Your program passed 1 out of 1 hidden test case(s). NOTE: These may not be the only hidden test cases that your program be evaluated upon." A blue arrow points to this message.
- Console (Bottom):** Shows the output: "Compiled successfully. Execution succeeded. Program accepted." and the timestamp "Last saved at 5:22:42 PM".

# Repeated Evaluation

- You can evaluate your program as many times as you like before submission
- This allows you to keep correcting your program
- If your program passes all test cases, a **green floating notification** on the top-right corner will appear with an appropriate message

The screenshot displays the ITS CS101 Tutor interface. On the left, a sidebar shows 'Problem', 'Tutor', and 'Legend'. The main area is titled 'Tutor' and shows two evaluation results sections. Each section includes a table with columns for '#', 'INPUT', 'EXPECTED OUTPUT', 'ACTUAL OUTPUT', and a checkmark column. The first section is timestamped '5:24:08 PM' and the second '5:23:51 PM'. Both tables show a single test case where the input is 'Let\s "C"!' and the actual output matches the expected output 'Let\s "C"!'. Below each table is a message: 'Your program passed 1 out of 1 hidden test case(s). NOTE: These may not be the only hidden test cases that your program be evaluated upon.' On the right, a code editor shows C++ code: 

```
1 #include<iostream>
2 using namespace std;
3
4 int main(){
5
6     cout << "Let\s \"C\"!";
7
8
9
10    return 0;
11 }
```

 A green floating notification in the top-right corner says: 'Congratulations! Your program has passed all test cases. You can now submit this program.' At the bottom, a console window shows: 'Compiled successfully. Execution succeeded. Program accepted. Program accepted.' and 'Last saved at 5:22:42 PM'.

# Submit Your Code

- You can submit your code multiple times
- You can submit your code even if it does not pass all the test cases.
- Do not forget to submit your code, before the event ends
- Code that is not submitted may not be graded
- Only the last submitted version is graded
- To submit, click on **Submit** option in the **File** tab

The screenshot displays a coding environment with the following components:

- File Menu:** Open with 'Submit' highlighted by a blue arrow.
- Code Editor:** Contains the following C++ code:

```
1 #include<iostream>
2 using namespace std;
3
4 int main(){
5
6     cout << "Let's C!";
7
8
9
10    return 0;
11 }
```
- Evaluation Results Table:**

#	INPUT	EXPECTED OUTPUT	ACTUAL OUTPUT	
1	Let's C!	Let's C!	Let's C!	✓
- Notification:** "Your program passed 1 out of 1 hidden test case(s). NOTE: These may not be the only hidden test cases that your program be evaluated upon."
- Console:** Shows the output "Let's C!".

# Upload/Download Your Code

- You can use Upload option in the File tab to load a python file from your system into Prutor's code editor.
- You can use Download option in the File tab to copy the code from Prutor's code editor to your system
- Copy/Paste also works in the code editor 😊

The screenshot displays the Prutor IDE interface. At the top, there is a menu bar with 'File', 'Run', and 'Help'. Below the menu bar, a file menu is open, showing options: 'New File', 'New Folder', 'Save', 'Submit', 'Download', and 'Upload'. A blue arrow points to the 'Download' option. The main editor area shows C++ code:

```
1 #include<iostream>
2 using namespace std;
3
4 int main(){
5
6     cout << "Let\\s \"C\"!";
7
8
9
10    return 0;
11 }
```

Below the code editor, there is a console window showing the output: 'Let's "C"!'. The interface also includes a 'Problem' tab with the title 'Tuto', a 'Tutor' section with a timer '5:24:0', and an 'Evaluation Results' section. The evaluation results table is as follows:

#	INPUT	EXPECTED OUTPUT	ACTUAL OUTPUT	
1	Let\s "C"!	Let\s "C"!	Let\s "C"!	✓

Below the table, there is a message: 'Your program passed 1 out of 1 hidden test case(s). NOTE: These may not be the only hidden test cases that your program be evaluated upon.'

# Homepage After Submission

- After submitting your code, the homepage will mark your question as **submitted**

Prutor CS101

CodeBook Practice Scratchpad Student 1

## Ongoing Event

### test1

Ends on Fri Jan 01 2016 at 21:53:00

Q1	20 Points	submitted	Start Coding
Q1	20 Points	not-submitted	Start Coding
Q2	20 Points	submitted	Start Coding
Q3	20 Points	submitted	Start Coding
Q4	20 Points	not-submitted	Start Coding

GRADE CARD

## Course Statistics

### Course Problems

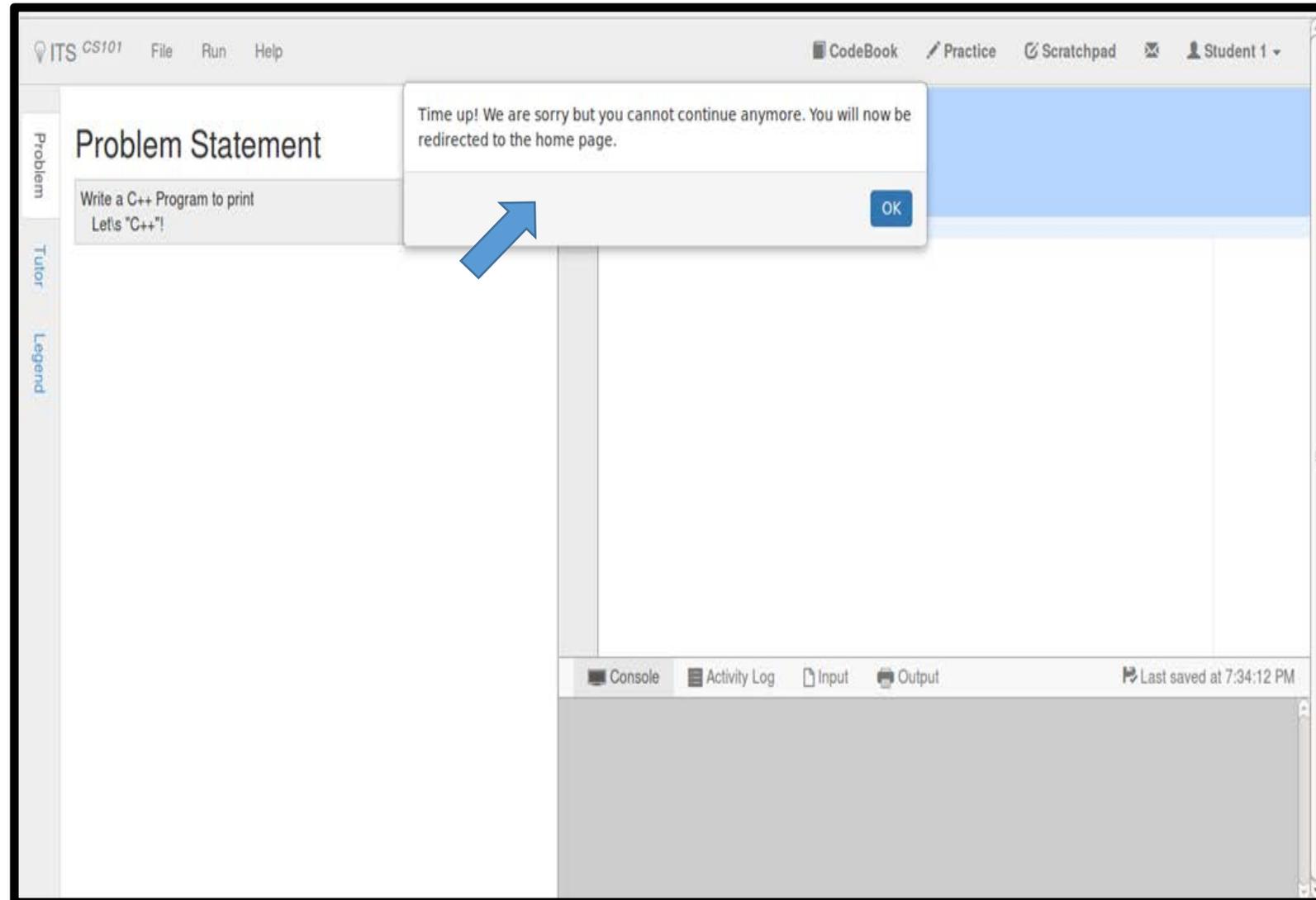
Submitted	3
Not Submitted	2

### Course Events

Labs	1
Exams	0
Quizzes	0

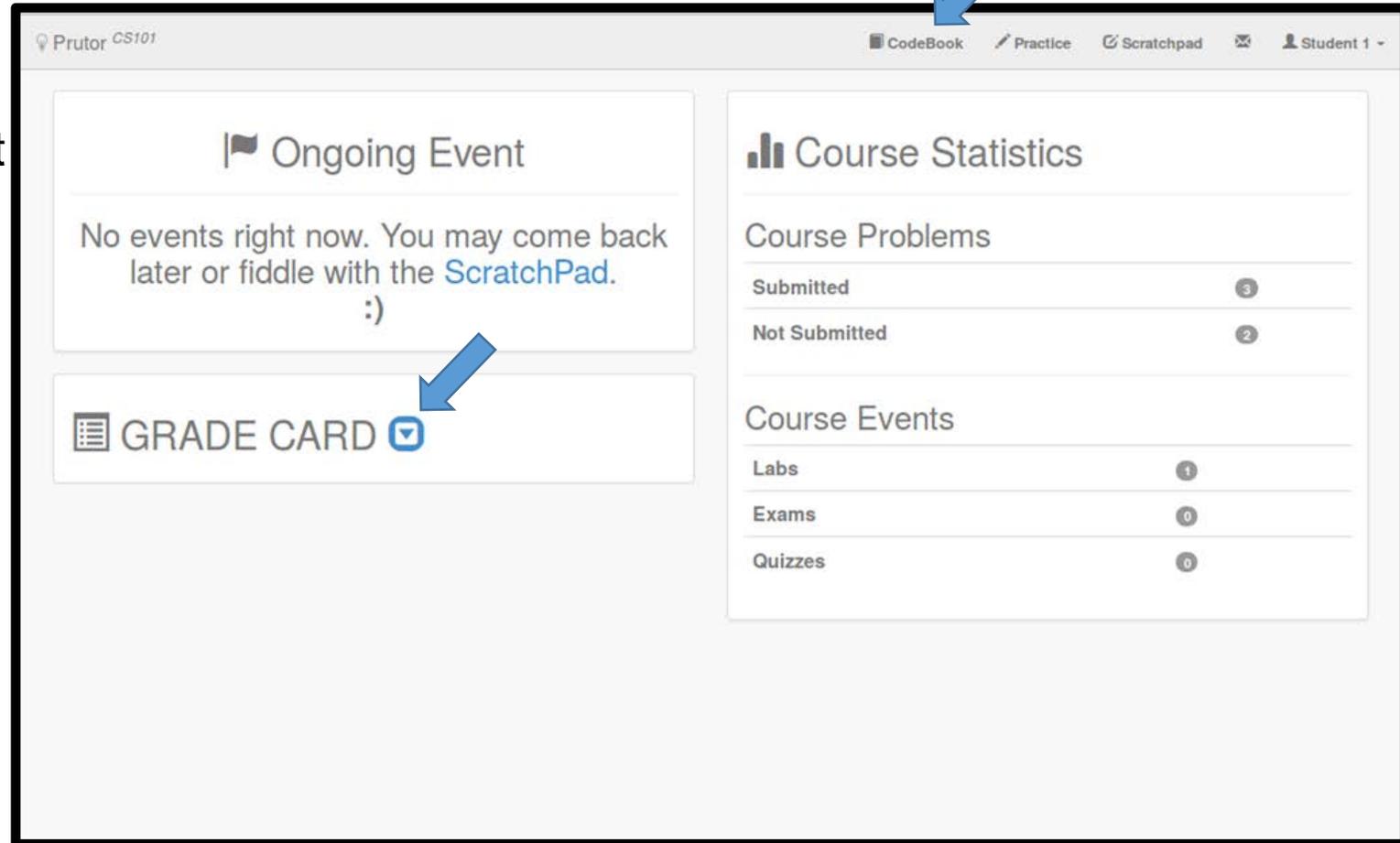
# End of Event (1)

- You have limited time to write the code for all questions.
- You will be intimated through a floating notification when you have only 30 minutes left
- When the **time is up**, you will get a notification and you will **not be allowed to edit the code any more**
- You will be redirected to your homepage



## End of Event (2)

- After an event finishes, it stops showing on your homepage (i.e. it is not accessible to you)
- You can view your submitted code after the event is over by visiting your **Codebook**
- Once the grading is done, you can view your marks by clicking on the arrow button next the **Grade Card**



The screenshot shows the Prutor CS101 homepage. At the top, there is a navigation bar with links for CodeBook, Practice, Scratchpad, and a user profile for Student 1. The main content area is divided into two columns. The left column features an 'Ongoing Event' section with a message: 'No events right now. You may come back later or fiddle with the ScratchPad. :)'. Below this is a 'GRADE CARD' section with a blue arrow button next to it. The right column contains 'Course Statistics' with two sub-sections: 'Course Problems' and 'Course Events'. The 'Course Problems' section shows 'Submitted' (3) and 'Not Submitted' (2). The 'Course Events' section shows 'Labs' (1), 'Exams' (0), and 'Quizzes' (0). Two blue arrows are overlaid on the image: one pointing to the 'CodeBook' link in the top navigation bar, and another pointing to the blue arrow button next to the 'GRADE CARD' link.

Category	Count
Submitted	3
Not Submitted	2
Labs	1
Exams	0
Quizzes	0

# Graded Questions

- When your question is graded the marks are shown in the **GRADE CARD** box
- Only the Q2 is evaluated in this screenshot. The other questions are yet to be evaluated (or the student did not submit the code)

The screenshot shows the Prutor CS101 interface. At the top, there are navigation links for CodeBook, Practice, Scratchpad, and a user profile for Student 1. The main content is divided into three sections:

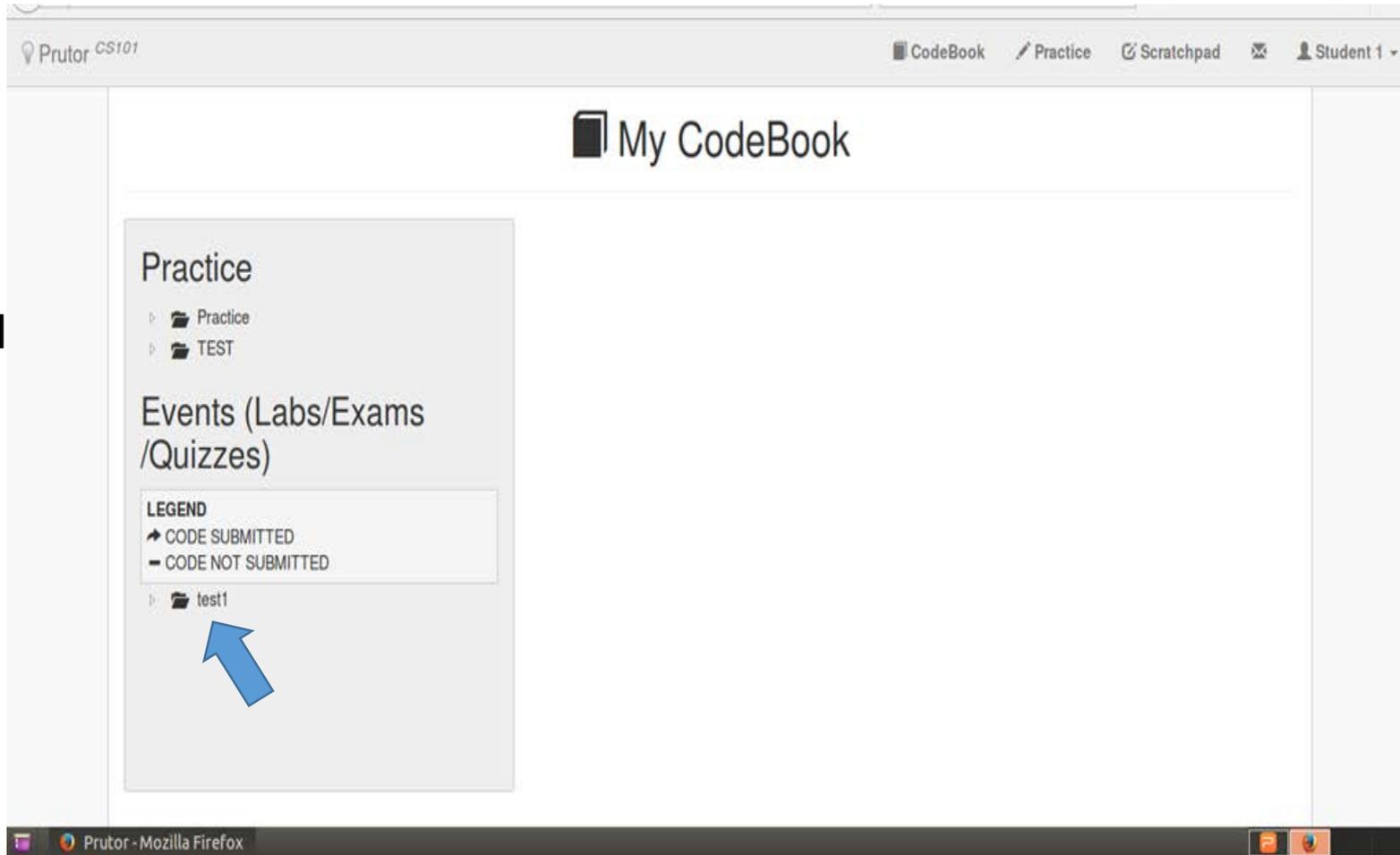
- Ongoing Event:** A message stating "No events right now. You may come back later or fiddle with the [ScratchPad](#). :)"
- Course Statistics:** A bar chart showing the number of submitted and not submitted problems. Submitted: 3, Not Submitted: 8.
- Course Events:** A list of events with counts: Labs: 1, Exams: 0, Quizzes: 0.

The **GRADE CARD** section is highlighted with a blue arrow. It shows a table for test1 with four questions (Q1, Q2, Q3, Q4). Q2 is the only one graded, showing 20 / 20 marks. Q3 is also marked with a checkmark but has "Not Graded" below it. Q1 and Q4 are "Not Graded".

test1	Q1	Q2 ✓	Q3 ✓	Q4
	Not Graded	20 / 20	Not Graded	Not Graded

# CodeBook (1)

- Here you can see the questions you have attempted in the **test1**
- Click on the question to see your submitted code and the **evaluator's remarks**, if any



# CodeBook (2)

- This page gives the details of the problems attempted and grading status, if the problem is part of a **Graded Lab**
- You can view the evaluator's remark at the bottom
- In the last text box you can send a **Request** for re-evaluation of your code

The screenshot displays the CodeBook interface for a problem titled "#3189 print-Mon-1". The page is divided into several sections:

- Practice**: A sidebar on the left containing a "Practice" section with "TEST" and "Events (Labs/Exams/Quizzes)". A "LEGEND" section indicates "CODE SUBMITTED" (green) and "CODE NOT SUBMITTED" (red). A tree view shows "test" with sub-items "Q1" through "Q12", and "print-Mon-1" (highlighted) with sub-item "Q1 (compute-Mon-2)".
- Problem Statement**: A section titled "Write a C++ Program to print Let's 'C++'" with the problem ID "#3189".
- YOUR CODE**: A code editor showing C++ code for printing "Let's 'C++'":

```
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     cout << "Let's 'C++'";
7
8
9     return 0;
10 }
```
- GRADING STATUS**: A section stating "This assignment has been awarded 15 marks out of 20". Below this is a text box containing the evaluator's remark: "You can write the comment here regarding grading".
- Request Re-evaluation**: A button labeled "Request Re-evaluation" is located at the bottom right of the grading status section.

Two blue arrows point to the evaluator's remark text box and the "Request Re-evaluation" button, respectively.

# Practice

- You can use the **Practice Arena** to practice programming
- Here you get the same Code Editor where you can **Execute** and **Evaluate** your code.
- This section will contain practice problems (along with test cases)
- The code in the Practice Arena is not for submission

Prutor CS101

CodeBook Practice Scratchpad Student 1

## Practice Arena

Practice problems aimed to improve your coding skills.

- Practice
  - Area under graph
  - L1S1P1-Inversion
  - L1S2P4-Jumbo
  - Palindrome
- TEST

### Area under graph

Practice

(20 Points)

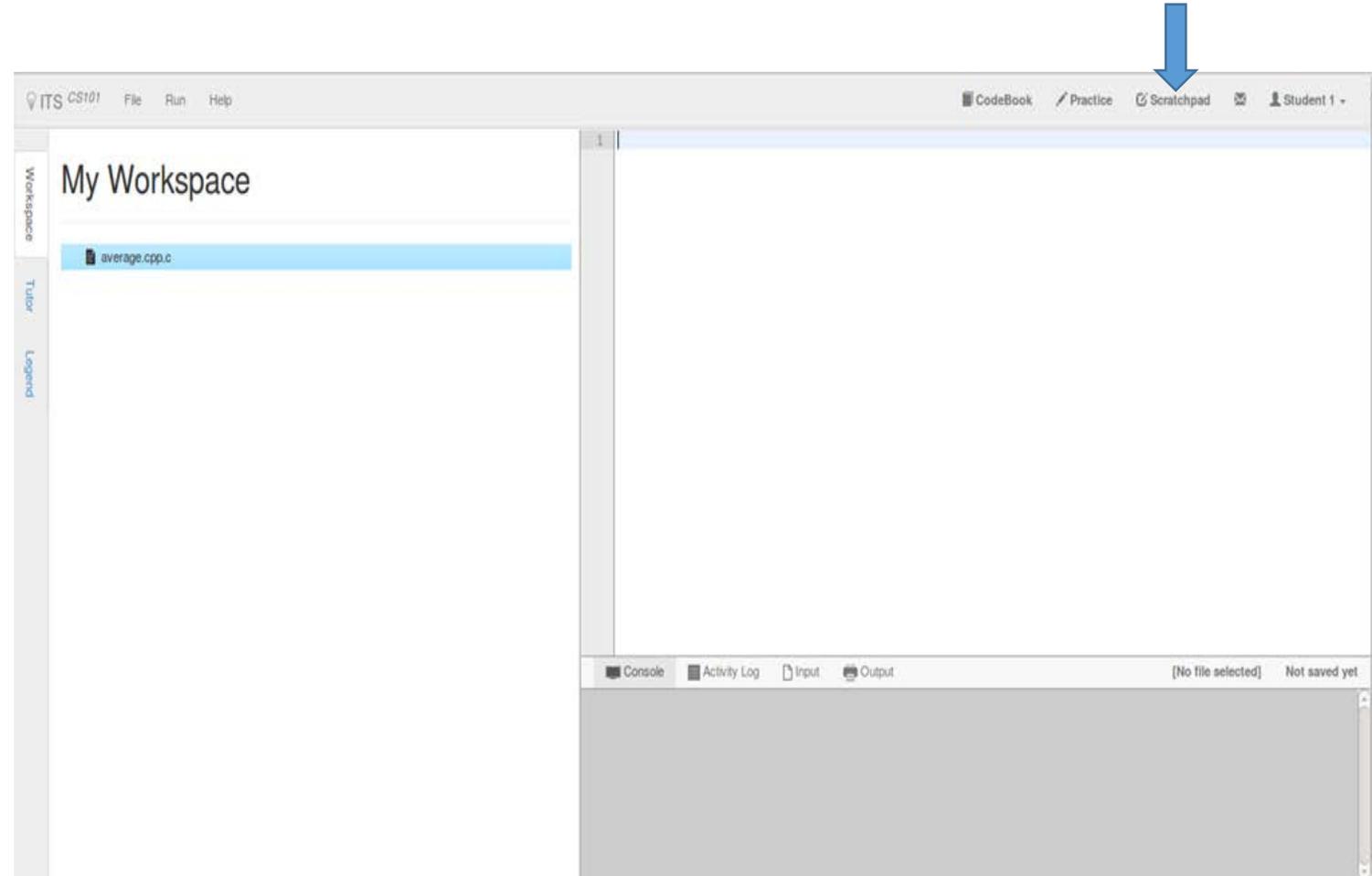
Given a function  $f(x)$  where  $f(x) \geq 0$  over an interval  $a \leq x \leq b$ , we can compute the area of the region that is under the graph of  $f(x)$  and above the interval  $[a, b]$  on the  $x$ -axis as follows:

We divide the interval  $[a, b]$  into  $n$  subintervals of length  $\Delta x$  (where  $\Delta x$  must be  $(b - a) / n$ ). We label the endpoints of the subintervals by  $x_0, x_1, \dots, x_n$ , so that the leftmost point is  $a = x_0$  and the rightmost point is  $b = x_n$ . The picture shows the case with four subintervals.

To estimate the area under the graph of  $f$ , we just need to add up the areas of all the rectangles. Using

# Scratchpad (1)

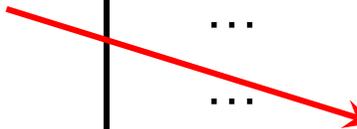
- You can use the **Scratchpad** to practice programming on your own
- No questions are provided by the instructor
- You need to create a file before you can start editing
- Here you get the same **Code Editor** where you can **Execute** and **Evaluate** your code
- It is advisable that you use **SPYDER IDE** instead of scratchpad.



# Prutor Does Not Support Interaction

- We cannot interleave input and output
  - Such an interaction is supported in SPYDER IDE or command line execution of programs
- In Prutor, we cannot expect to see the output  
**No. of sides?**  
and give the input after it
- You have to provide **all the expected input values** before running the program in Prutor
- Since **Evaluation** uses simple difference of expected output and actual output, do not print any thing extra (using print or input)
  - Print only what is mentioned in the program statement.
  - Take care of spaces too

```
...  
...  
...  
printf("No. of sides?");  
scanf("%d",&num_side);  
...  
...
```



Thank You

Happy Prutoring!