|  |  |  |
| --- | --- | --- |
|  |  | Automated Code Grading  Project report  Zhen Li  Yue Gan  Jun Gao  Haifeng Jin  Linqian Li  Zhenhao Qian |

Dec 5, 2015

# Summary

Our customer is Bryan High School. The teacher needs an application that can grade their programming homework automatically. Besides, the application also provides interfaces for teachers and students. Firstly, for the teachers and students, they will have their own user information for login so as to collect their data information. For the teacher, we design functions for him to assign new homework including its information, upload expected answers for grading and check the homework information of each student. For students, we design functions for them to check new homework information, upload their codes and compare with the right answers uploaded by the teacher; also they will get the grades automatically after each comparison and they can edit their codes until they satisfy the grade.

# Introduction

# Stakeholders

Customers:

Jason Cordes, Bryan High School

Developers:

1. Yue Gan – Product Owner
2. Zhen Li – Scrum Master
3. Haifeng Jin
4. Zhenhao Qian
5. Linqian Li
6. Jun Gao

End Users:

Bryan High School Students

# User stories

## Iteration 0:

### Feature 1: Student Login Interface  5 points

As a student

So that I can record all my homework history. I want to login to my personal account.

### Feature 2: Student Code Testing Interface  5 points

As a student

So that I can test whether my program runs properly  I want to upload my source code and check the running result.

### Feature 3: View students' submissions  3 points

As a teacher

So that I can keep track of each submit of the students who takes my class  I want to obtain the view of the code, the score and the number # of each submission of these students.

### Feature 4: View homework information  3 points

As a teacher

So that I can obtain the information of the homework I assigned  I want to obtain the description, the release date, the deadline, the constraint inputs, the expected outputs and the students who submitted of each homework

### Feature 5: Edit homework  4 points

As a teacher

So that I can edit the homework I assigned  I want to obtain the original information including the description, the deadline, the inputs and expected outputs for test and I can change all these and submit the new information.

### Feature 6: Assign homework  5 points

As a teacher

So that I can assign homework to my students  I want to submit the description, the deadline, the inputs and expected outputs for test.

### Feature 7: View homework information  3 points

As a teacher

So that I can obtain the information of the homework I need to complete or I have completed I want to obtain the description, the release date, the deadline and the grade if I have accomplished of each homework

### Feature 8: Submit homework  5 points

As a student

So that I can submit one of my homework I want to obtain a form including an editor or a file upload button and a submit button to submit my code for this homework

## Iteration 1:

### ~~Feature 1: Student Login Interface~~

~~As a student~~

~~So that I can record all my homework history. I want to login to my personal account.~~

### ~~Feature 2: Student Register Interface  5 points~~

~~As a student~~

~~So that I can use the system to finish my homework. I want to sign up an account to the system.~~

## Iteration 2:

### ~~Feature 1: View homework information~~

~~As a teacher~~

~~So that I can obtain the information of the homework I assigned I want to obtain the description, the release date, the deadline, the constraint inputs, the expected outputs and the students who submitted of each homework~~

### ~~Feature 2: View students' submissions~~

~~As a teacher~~

~~So that I can keep track of each submit of the students who takes my class I want to obtain the view of the code, the score and the number # of each submission of these students.~~

### Feature 3: Teacher decide which class is the student in After the registration of the students, the teacher has to ways to add a student to one class. 2 points

First is directly add the student to a class. Second is to give the student a class code. The student then put it in the system to get into the class.

### Feature 4: One class can have more than one teacher 2 points

As an instructor

So that different teachers can share resources and cooperate I want one class can have more than one teacher Feature 5: Student dashboard As a student so that I can check my course and homework arranged by courses I want to have a dashboard show all my courses and unfinished courses.

## Iteration 3:

### Feature 1: One class may let the student use different languages 2 points

The class may use multiple languages for its homework. Also, one homework can have multiple languages.

### Feature 2: Each line in the output file is one test case 2 points

There is only one input & output file for each homework. Each line in the output is one case. Each case worth the same points.

### ~~Feature 3: Highlight the remaining time when critical~~

~~If the remaining time for a homework is less than 2 days, the color of the time should be yellow. When less then 1 day, it should be red. When passed the deadline, it should be grey.~~

### Feature 4: Keep every submission for record 1 points

No later submissions should cover the earlier ones.

## Iteration 4:

### Feature 1: Display detailed message for compile errors 3 points

As a student

So that I can get the revise my code I want to obtain the detail information of compile errors for my homework submission.

### Feature 2: Keep every submission for record 3 points

As a teacher

So that I can keep track of progress for any student on every homework I want that no later submissions should cover the earlier ones.

### Feature 3: Student Code Testing Interface 3 points

As a student

So that I can test whether my program runs properly I want to upload my source code and check the running result.

### ~~Feature 4: Edit homework~~

~~As a teacher~~

~~So that I can edit the homework I assigned I want to obtain the original information including the description, the deadline, the inputs and expected outputs for test and I can change all these and submit the new information.~~

### Feature 5: Use UserID to login 2 points

As a student

So that I can log in even if I do not have an Email. I want to use either Email and UserID to login. Feature 6: Assign homework As a teacher So that I can assign homework to my students I want to submit the description, the deadline, the inputs and expected outputs for test.

### Feature 6: Announcement for the students 4 points

As a student

So that I can track the latest updates of the class I want to have an announcement reminding me of the latest news.

# Lofi-mockup and

# final screenshot

# PROJECT TIMELINES AND MEETINGS

# bdd/tdd

## Benefits:

* It is of great help to ensure the correctness of the implementation of controller methods and the designs of links and JavaScript methods in the views during development.
* It reduces the time spent on positioning bugs and debugging.
* It helps us have a clear idea of the logic of dealing with the activities of users.

## Problems:

* Although it reduces the time spent on debugging, it takes much more time before we can get started on developing a new feature.
* Cucumber provides a well-designed framework to deal with BDD, but it does not provide enough methods, as a result we have to first develop the step definitions carefully. Besides, since the entity relationship is complicated, it becomes less efficient to design the test case.
* Really not sure if Cucumber and RSpec helps Agile Development since we believe these tools still need to improve so that the developers can easily implement the test case instead of developing the tedious step definitions first.

# Configuration management

The version control of the project is using Git, which is conducted by GitHub.

# TOOLS/gem used

## Major Tools:

Ruby 2.2.2, Rails 4.2.1, Bootstrap 3.2.0, SQLite3, GitHub, Rspec, Cucumber, JVM.

## Gems:

*# Bundle edge Rails instead: gem 'rails', github: 'rails/rails'*gem 'rails', '4.2.1'  
*# Use sqlite3 as the database for Active Record*gem 'sqlite3'  
*# Use SCSS for stylesheets*gem 'bootstrap-sass', '~> 3.3.5'  
gem 'sass-rails', '~> 5.0'  
*# Use Uglifier as compressor for JavaScript assets*gem 'uglifier', '>= 1.3.0'  
*# Use CoffeeScript for .coffee assets and views*gem 'coffee-rails', '~> 4.1.0'  
*# See* ***https://github.com/rails/execjs****#readme for more supported runtimes  
# gem 'therubyracer', platforms: :ruby  
  
# Use jquery as the JavaScript library*gem 'jquery-rails'  
*# Turbolinks makes following links in your web application faster. Read more:* ***https://github.com/rails/turbolinks***gem 'turbolinks'  
*# Build JSON APIs with ease. Read more:* ***https://github.com/rails/jbuilder***gem 'jbuilder', '~> 2.0'  
*# bundle exec rake doc:rails generates the API under doc/api.*gem 'sdoc', '~> 0.4.0', group: :doc  
  
*# Use ActiveModel has\_secure\_password  
# gem 'bcrypt', '~> 3.1.7'  
  
# Use Unicorn as the app server  
# gem 'unicorn'  
  
# Use Capistrano for deployment  
# gem 'capistrano-rails', group: :development  
  
group* :development, :test **do** *# Call 'byebug' anywhere in the code to stop execution and get a debugger console* gem 'byebug'  
  
 *# Access an IRB console on exception pages or by using <%= console %> in views* gem 'web-console', '~> 2.0'  
  
 *# Spring speeds up development by keeping your application running in the background. Read more:* ***https://github.com/rails/spring*** gem 'spring'  
**end***group* :test, :development **do** gem 'cucumber-rails', :require *=>* **false** *# database\_cleaner is not required, but highly recommended* gem 'database\_cleaner'  
**end**

# automated compoler design

# project overview



The entire project is designed as above.

Firstly, users need to login. Students will see the dashboard after logging in. They can see the announcements and the homework lists of their courses. Via the View buttons of the homework, students can see the details of homework and submit their code to the server. Via the