



Summer Fellowship Report

On

Yaksh:Question Templating

Submitted by

Amit Peshwani

Submitted to

Prof.Kannan M. Moudgalya
Chemical Engineering Department
IIT Bombay

July 5, 2018

Acknowledgment

The internship opportunity I had with FOSSEE IIT Bombay was a great chance for learning and professional development. Therefore, I consider myself as a very lucky individual as I was provided with an opportunity to be a part of it. I am also grateful for having a chance to meet so many wonderful people and professionals who led me through this internship period.

Bearing in mind previous I am using this opportunity to express my deepest gratitude and acknowledge my sense of gratitude to Prof.Kannan M. Moudgalya who in spite of being extraordinarily busy with his duties, took time out to hear, guide and keep me on the correct path and allowing me to carry out my project at their esteemed organization and extending during the Fellowship. It is my radiant sentiment to place on record my best regards, deepest sense of gratitude to Aditya Palaparthi (Project Research Assistant), Mahesh Gudi (Project Research Assistant) for their careful and precious guidance which were extremely valuable for my study both theoretically and practically.

I perceive as this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and I will continue to work on their improvement, in order to attain desired career objectives. Hope to continue cooperation with all of you in the future,

Sincerely,
Amit Peshwani

Contents

1	Introduction	3
2	Moderator and User Mode : Yaksh	4
2.1	Moderator Mode	4
2.2	User Mode	4
3	Question Templates	5
3.1	Standard TestCase	5
3.2	Applied Solution: EasyStandard TestCase	5
3.3	Sequence Diagram	8
4	Cleaning of Question form	9
4.1	Problem	9
4.2	Solution	10
5	Assertion Error Messages	12
5.1	Problem	12
5.2	Solution	12

Chapter 1

Introduction

Yaksh is a open source project which lets user to create and take programming quiz .It supports various programming languages like :- C, C++, Python and simple Bash. User can solve any questions by using these languages. Yaksh uses "test cases" to test the the implementations of the students. It also supports simple multiple choice questions and file uploads so that user can easily submit his code. Not only you can practice the questions even you can also conduct a programming quiz that supports various languages. In Yaksh , moderator can create Standard TestCases to test the user code

Chapter 2

Moderator and User Mode : Yaksh

2.1 Moderator Mode

As we know that yaksh is made for conducting quiz. So, In Yaksh, Moderator can easily make questions on various languages like:- Python, C, C++ and Bash. So, for making new questions we have to follow these steps:-

- First login as moderator and go to Questions page.
- Here you can add new questions by click on add question button.
- In add question Page you have to submit all informations like:-Summary, Language, Type of Question, Points, Description, Solution and Many other details related to that question.
- After filling these information you can save this by click on save option.

2.2 User Mode

In User Mode , the user have to solve the question that is created by Moderator . Here the code is submitted by user and it is checked by the evaluators . If the code is incorrect than the error messages are shown based on the type of error , so the user can debug the code and can find the error . If the code is correct than it is submitted successfully .

Chapter 3

Question Templates

3.1 Standard TestCase

In StandardTestCase , the moderator has to write the code which will check if the code submitted by user is correct or not . The code can be of C , C++ , Python and Java , so the moderator should know the basics of every language to generate the testcases . But it can be possible that moderator doesn't know how to write testcase for any particular language. So the idea was to add a feature in Yaksh (Question section) which will generate the snippet for the testcase .

3.2 Applied Solution: EasyStandard TestCase

In EasyStandardTestCase, the moderator has to write the name of the function which will be submitted by user , arguments of user function and type of output . There will be different fields of easystandard testcase form for different languages .

For Python: Moderator has to fill the function name field , choose the type of operator which will check the condition , argument,output values .

- Easystandard Testcase form

The screenshot shows a web form for creating a test case. The form is titled 'Easy Standard Testcase' and contains the following fields and controls:

- Type:** A dropdown menu with 'Easy Standard Testcase' selected.
- Function name:** A text input field containing 'add'.
- Operator:** A dropdown menu with '==' selected.
- Argument:** A text input field containing '5,5'. Below the field is the text 'Comma seperated values passed to function'.
- Output Values:** A text input field containing '10'. Below the field is the text 'Value returned by function'.
- Delete:** A checkbox that is currently unchecked.
- Add Test Case:** A dropdown menu with a blank space selected.
- Buttons:** Three buttons at the bottom: 'Save and Add Testcase(s)', 'Back to Questions', and 'Delete Selected Files'.

- Generated code saved in database

```
assert add(5,5)==10|
```

For C,C++,Java: Moderator has to fill the function name field , choose the type of operator which will check the condition , argument type,argument,type of output,output values .

- Easystandard Testcase form

Type: Easy Standard Testcase ▾

Function name: add

Operator: == ▾

Argument Type: int,int Eg: int,int

Argument: 5,5 Comma seperated values passed to function

Output Values: 10 Value returned by function

Output Type: int Type of value returned by function

Delete:

Add Test Case: ▾

Save and Add Testcase(s) Back to Questions Delete Selected Files

- Generated code saved in database for C/C++,Java

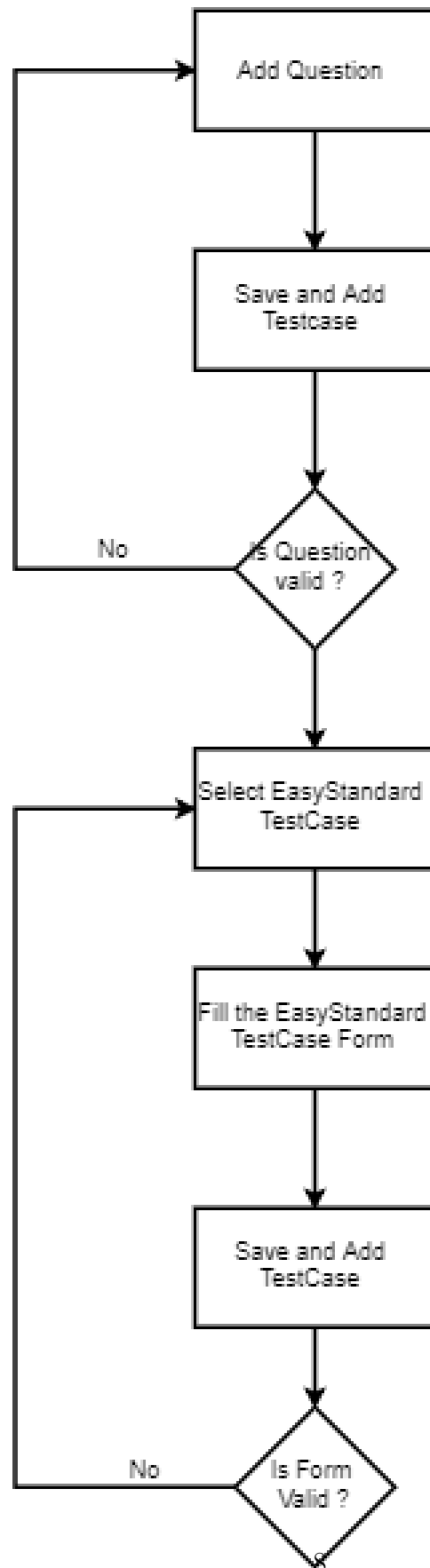
```
#include <stdio.h>
#include <stdlib.h>
#include<assert.h>

extern int add(int,int);

int main(void)
{
    int result,output;
    result = 12;
    assert(result == add(6,6));
}
```

```
class main
{
public static void main(String arg[])
{
    Test t = new Test();
    int result;
    result = t.add(5,5) ;
    assert result==10 ;
    System.out.println("Input submitted to the function: "+result);
}
}
```


3.3 Sequence Diagram



Chapter 4

Cleaning of Question form

4.1 Problem

Previously based on type of question all testcases forms were generated . Like for code type of questions MCQ , Integer ,Float,String testcases were generated which are not applicable for code type of questions .

- Question form

The screenshot shows the 'Add Question' form in the YAKSH system. The form is titled 'Add Question' and is located in the top right corner of the page. The form is divided into several sections:

- Summary:** A text input field containing 'Testing'.
- Language:** A dropdown menu with 'Python' selected.
- Type:** A dropdown menu with 'Code' selected.
- Points:** A numeric input field with '1' and '+' and '-' buttons.
- Rendered:** A text input field containing 'Testing Question for'.
- Description:** A text input field containing 'Testing Question form'.
- Tags:** A text input field.
- Rendered Solution:** A text input field.
- Solution:** A large text area for entering the solution.

YAKSH

Questions Courses Monitor Grade User Regrade Change Password Aditya Palaparthi Logout

Snippet:

Minimum Time: Standard (selected), StdIO, MCQ/MCC, Hook, Integer, String, Float, Arrange options

Partial Grading:

Grade Assignment:

File: No files selected.

Add Test Case:

4.2 Solution

Now based on type of question and language , forms will be generated . Like for code and python language Standard , Easystandard , Stdio Based , Hook Testcase forms will be generated .

- Question form

YAKSH

Questions Courses Monitor Grade User Regrade Change Password Aditya Palaparthi Logout

Add Question

Summary:

Language:

Type:

Points:

Rendered:

Description:

Tags:

Rendered Solution:

Solution:

Snippet:

Minimum Time(in minutes):

Partial Grading:

Grade Assignment Upload:

File: No files selected.

Add Test Case:

- Standard
- StdIO
- Hook
- Easy Standard

Chapter 5

Assertion Error Messages

5.1 Problem

Previously when user submits the code and if there was logical error in the code , assertion error was shown which is not useful to debug the code .



```
Error No. 1

executable: /home/amitpeshwani/Desktop/Yaksh/online_test/yaksh_data/output/teacher/main.c:9: int main(): Assertion `result==3' failed.
```

5.2 Solution

Now when user submits the code , what was the expected output and which arguments were passed are shown.

Error No. 1

You did not pass the Test Case

Called Function

add(5,5)

Arguments Passed to the Function

5,5

Expected Output

10