Kilik White

CSCI 497

April 13, 2022

Professor Hayes

1. **The Purpose of the Project**

**1.1 Background of the Project Effort:**

I will create a website that allows people to practice for programming competitions against each other. This opportunity to make this website came when I wondered about programming competitions and since there is barely a way to practice with another person online, this website will help with practice.

**1.2 Goals of the Project:**

The goal of the project is to make a website where multiple people can practice programming against each other online and spectate a practice session.

1. **The Stakeholders**

**2.1 The Client:**

The client is Professor Hayes and the decisions he is responsible for is….

* Approving the project
* Overseeing My project development
* Giving me some ideas for the project
* Advising my decisions

**2.2 The Customer:**

The main customer will be Professor Hayes and he is responsible for…

* Giving feedback on the website itself

**2.3 The Hands-On Users of the Product:**

| User name/category | User role | Subject matter experience | Technological experience |
| --- | --- | --- | --- |
| Computer-Science Students | They will practice on the website against another computer science school student or make a room on the website to set up practice with their peers | They will be between novices to masters of the information that the website tests so when they practice against each other some will be faster than others | For technology computer science students would know how to decently use the technology |
| Computer-Science teachers/professors | They will set up the room so the student scan practice in or spectate what the student is doing | They will have a lot of knowledge of the subject matter inside of the website | They should be able to decently use the technology |
| General Teachers/professors | They will set up the room so the student scan practice in or spectate what the student is doing | They will most likely have little to no knowledge of the subject matter on the website | The teacher/professors experience on technology will be verified on quality |

1. **Constraints**

**3.1 Solution Constraints:**

* **ID#**: 1

Type: Solution Constraints

Description: The product shall run only on Laptops and Desktops

Rationale: The client will most likely not user the product on mobile devices for means of setting up a room or practice.

Fit Criterion: The development of the project shall be scaled to a Website.

Priority(Scale of 1(low)-5(high)): 1

Dependencies: N/A

**3.2 Schedule Constraints:**

The deadline of this project is March 1, 2023 because my final semester for college is in 2023 and that semester will have Senior Project Implementation and Defense meaning the project must be completed.

**3.3 Budget Constraints:**

My Budget is $0 because I am a college student so I will not use services that require a lot of money in the construction of the project

**4. Performance**

**4.1 Speed and Latency**

* **ID#**: 2

Type: Performance(Speed and Latency)

Description: The website should set up a room in the website within 30 seconds

Rationale: The client wants to have the room # set up so others can connect to that room # quickly

Fit Criterion: The website’s response time should not exceed 2 minutes to make an online room

Priority(Scale of 1(low)-5(high)): 3

Dependencies: N/A

* **ID#**: 3

Type: Performance(Speed and Latency)

Description: The website should compile all the test code in 2 minutes

Fit Criterion: The website’s response time should not exceed 3 minutes to compile code

Priority(Scale of 1(low)-5(high)): 4

Dependencies: ID#2 and ID#4

* **ID#**: 4

Type: Performance(Speed and Latency)

Description: The website should connect to another room # within 5 minutes

Rationale: The client wants to connect to another person’s room to practice programming simultaneously

Fit Criterion: The website’s connection time to another room should not exceed 7 minutes

Priority(Scale of 1(low)-5(high)): 4

Dependencies: ID#2

**4.2 Safety-Critical**

* **ID#**: 5

Type: Performance(Safety-Critical)

Description: The project shall not expose another person’s IP address

Rationale: No one in the website will be able to see another person’s IP address via any means.

Fit Criterion: IP addresses will be made invisible on the website and on debugging

Priority(Scale of 1(low)-5(high)): 5

Dependencies: ID#2 and ID#4

**4.3 Precision or Accuracy**

* **ID#**: 6

Type: Performance(Precision or Accuracy)

Description: The code inputted by the user should be accurately reflected on the website

Rationale: The client should be able to type correct code and get the right results and incorrect code and get the incorrect results

Fit Criterion: The code will compile in the server and output accurate information

Priority(Scale of 1(low)-5(high)): 5

Dependencies: N/A

* **ID#**: 7

Type: Performance(Precision or Accuracy)

Description: The code in the test cases should be accurately reflected on the website

Rationale: The client should see the results of the test case from taking the input of their code

Fit Criterion: The code will output what is inside of the test cases using comparison of the client’s code.

Priority(Scale of 1(low)-5(high)): 5

Dependencies: ID#6

* **ID#**: 8

Type: Performance(Precision or Accuracy)

Description: The code will compile on the press of the RUN button

Rationale: The client will press the RUN button to compile the code and test against the test cases

Fit Criterion: The code will run and give appropriate errors if compile fails.

Priority(Scale of 1(low)-5(high)): 5

Dependencies: ID#6

**4.4 Reliability and Availability**

* **ID#**: 9

Type: Performance(Reliability and Availability)

Description: The website shall be available for 24 hours a day

Rationale: The client will be able to access the product at any time.

Fit Criterion: The website can be seen starting at 12:00AM

Priority(Scale of 1(low)-5(high)): 2

Dependencies: N/A

**4.5 Robustness or Fault-Tolerance**

* **ID#**: 10

Type: Performance(Robustness or Fault-Tolerance)

Description: The website shall save the last compiled code.

Rationale: In the event where the Internet is temporarily knocked out, the user will at least have the code that was last compiled when they reconnect.

Fit Criterion: The website will have the last compiled code saved in an internal file of the app.

Priority(Scale of 1(low)-5(high)): 1

Dependencies: ID#8

**4.6 Capacity**

* **ID#**: 11

Type: Performance(Capacity)

Description: The website should be able to handle altest 15 full rooms worth of people

Rationale: The website can make sure that the people in the 15 rooms will not suffer performance dips while they are practicing with another person inside of the online room

Fit Criterion: The performance will not dip from the high capacity of traffic happening in the website.

Priority(Scale of 1(low)-5(high)): 3

Dependencies: ID#2, ID#3, ID#4

**4.7 Scalability or Extensibility**

* **ID#**: 12

Type: Performance(Scalability or Extensibility)

Description: The website should be able to handle at least 30 different users for the website traffic since the numbers will grow overtime

Rationale: The website will overtime grow more popular so starting out with 30 users and updating it will be helpful.

Fit Criterion: The amount of users will not cause a slow down of the website and the website’s processing will get better overtime.

Priority(Scale of 1(low)-5(high)): 2

Dependencies: ID#11

**4.8 Longevity**

* **ID#**: 13

Type: Performance(Longevity)

Description: The website will run at least for one year after it is completed.

Rationale: The website will be around for a while so it can be used.

Fit Criterion: After one year after release, the website will not be supported unless it grows in popularity.

Priority(Scale of 1(low)-5(high)): 1

Dependencies: ID#12

**5. Usability**

**5.1 Ease of Use**

* **ID#**: 14

Type: Usability(Ease of Use)

Description: The website shall be easy for anyone at least 13 years or older to use

Rationale: The lowest age would be anyone in high school that is interested in this website

Fit Criterion: At least 85% of the people 13 years or older can do the tasks related to the website within 8 minutes

Priority(Scale of 1(low)-5(high)): 4

Dependencies: N/A

**5.2 Learning**

* **ID#**: 15

Type: Usability(Learning)

Description: The website shall be easier to someone with a computer science background to use instantly

Rationale: The users with a background of the programming language will most likely be computer science students

Fit Criterion: The individual with a computer science background will be able to use the product within a short time period effectively without much help.

Priority(Scale of 1(low)-5(high)): 2

Dependencies: N/A

* **ID#**: 16

Type: Usability(Learning)

Description: The person with no programming experience should be able to make a Spectator only room

Rationale: This is used so a user can just make a room and observe what goes on inside the room

Fit Criterion: The person can make a Spectator only room in a short time frame using only on screen directions.

Priority(Scale of 1(low)-5(high)): 4

Dependencies: N/A

**5.3 Understandability and Politeness**

* **ID#**: 17

Type: Usability(Understandability and Politeness)

Description: The website shall use understandable words for the actions that will happen on the site.

Rationale: The user will be able to easily understand what is about to happen in the program though clear labels.

Fit Criterion: The button label actions will do just as the labels say they will do

Priority(Scale of 1(low)-5(high)): 3

Dependencies: N/A

**5.4 Accessibility**

* **ID#**: 18

Type: Usability(Accessibility)

Description: The website shall be usable for color blind users.

Rationale: The color blind user can still use the website as well as a nomal sighted user.

Fit Criterion: The color blind user can do a task at a reasonable amount of time on the website similar to a normal sighted user.

Priority(Scale of 1(low)-5(high)): 5

Dependencies: N/A

* **ID#**: 19

Type: Usability(Accessibility)

Description: The website shall be usable for users with any partial sight.

Rationale: The partial sighted user will be accommodated by having appropriately sized buttons on the website that can be easily seen.

Fit Criterion: The partial sighted user can do a task at a reasonable time on the website similar to a normal sighted user.

Priority(Scale of 1(low)-5(high)): 4

Dependencies: ID#18

**5.5 Convenience**

* **ID#**: 20

Type: Usability(Convenience)

Description: The programming section of the website will have the necessary javascript packages already installed.

Rationale: The already installed packages will help the program compile so the user doesn't have to manually implement the required packages.

Fit Criterion: The programming packages will be already in the programming section of the website starting at line 1.

Priority(Scale of 1(low)-5(high)): 5

Dependencies: ID#3

* **ID#**: 21

Type: Usability(Convenience)

Description: There will be some default test cases for the program to be tested against.

Rationale: The default test casses will only test if there is an error and more advanced ones can be programmed in via adding them in..

Fit Criterion: The program on compile will run the Default test cases.

Priority(Scale of 1(low)-5(high)): 5

Dependencies: ID#3 and ID#20

**6. Maintainability and Support**

* **ID#**: 22

Type: Maintainability and Support

Description: The website shall have a help section that is available for users.

Rationale: This is used to make sure that the user can look at an online manual of the website.

Fit Criterion: The user can select the help button and get an online manual.

Priority(Scale of 1(low)-5(high)): 3

Dependencies: N/A

* **ID#**: 23

Type: Maintainability and Support

Description: The website shall be available for Linux and Mac.

Rationale: The website will be first built on Windows 10 computers so the website should be able to run on Linux and Mac machines.

Fit Criterion: The website shall run on Linux and Mac machines.

Priority(Scale of 1(low)-5(high)): 2

Dependencies: ID#6, ID#7, ID#8, ID#12