Ahsanullah University of Science & Technology
Department of Computer Science & Engineering

Coding Cat

CSE 3224
Information System Design
&
Software Engineering Lab

Submitted By:

Ahmad Subaktagin Jabir	16.02.04.061
Arunima Ayshee	16.02.04.066
Rahat Bin Osman	16.02.04.083
Aniqua Tabassum	16.02.04.085

Date of Submission: **23 July, 2019**

Coding Cat

Introduction:

An online judge is an online system to test programs in programming contests. They are also used to practice for such contests. Our project, Coding Cat, is an online judge, where the users will be able to build up their coding skills, using programming language they are comforted to, by solving problems that are best suited for them.

Project Objectives:

We are planning on making an online judge where:

1. Users will register or sign up to solve programming challenges
2. They will be provided with a verdict of their code. “AC” if the code is correct and different types of error messages such as “Runtime Error”, “Presentation error”, “Compilation Error” and “Time Limit Exceeded”
3. They will have a score based on the problems they solve using one account.
4. There will be some companies linked with the online judge who will hire employees based on their score in our online judge.

Study of Existing System:

There are multiple online judges present at the time being. Such as:

1. **UVa:** This is the oldest online judge, given name by University of Valladolid. They have, however, very recently have started rebranding, and since they have lost link with the University, after the death of professor Revilla, the soul of this site.
2. **Codeforces:** The most popular online judge, based on a rating system that divides the users in two categories, Div 1 and Div 2. The problems and contests are set according to the divisions.
3. **CodeMarshal:** They provide with interactive lectures, along with practices to make sure that the understanding levels of the students are up to the mark.

4. **HackerEarth:** This online judge is more popular for their tutorials and user interface.

Limitation in Existing System:

1. The current websites do not support as many languages, so not all users are getting benefited.
2. Other and higher concepts of Computer Science, such as, Machine Learning or Deep Learning cannot be practiced in these platforms.
3. Most of the Online Judges have unattractive and basic user interfaces.

Goals of the Proposed System:

We are planning on building an online judge that will differ from the other ones in the following ways:

1. We will create a very attractive and interactive user interface that will attract more users.
2. We will add more programming language variations, so that every user can build up their skills in the language they are comfortable in.
3. We also want to add other and higher concepts of Computer Science, to enrich the online judge even more. Such as, ML, DL.
4. We will keep a numerical rating system, a leaderboard that will encourage and push the users to always stay in front of the lines.
5. We will try to make connections and deals with different companies and software firms, who will offer jobs to the users of our website who have higher points.
6. Users will be able to migrate their points to another account if they wish to. This will be helpful if they create a new account on our website while still having an existing account.

Types of stakeholders of the Proposed System:

There will be two types of stakeholders in our proposed system.

1. **Users:** Users will come to our website and practice coding problems, participate in various competitions and level up their skills. There can be two types of users. They are-
    a) **Problem Solver:** They will solve the problems from the problems that are set in our website. Mainly students and coding interested people are these types of users.
    b) **Problem Setter:** They will set problems for our website which the problem solvers will solve.
2. **Companies:** Using our website companies can find and hire quality assured talents. Proving them recommendations and creating a platform for conducting great technical interviews.

Feasibility Analysis:

1. **Technical feasibility :**
    A. **Hardware Requirements :** The hardware requirements are :
        - **Processor:** Pentium IV
        - **Memory:** 128 MB RAM or More
        - **Hard Disk Capacity:** 40 GB or More

    B. **Operating System requirements:** Windows XP or Higher/Linux/Mac

    C. **Software requirements:**
        I. **Front-end tools:** We will use HTML, CSS, JavaScript and Bootstrap for designing the UI. ASP.NET will be used for both front-end and back-end, depending on the requirement.
        II. **Back-end tool:** C# will be used as the back-end language.
        III. **Database tool:** For database, we will use SQL server.

    Our current developing team has a good grip on the front end languages and SQL Server. ASP.NET is new to us, so we will try our best to adapt to

that. We are getting familiarized with C#, but it being an object oriented language, it should not be difficult to learn, as we excel in Java. The project size is larger than the usual online judges, since we are trying to integrate some new features, but is doable in the given time constraint. Since it is a web based project, it should not have any compatibility issues, as we will make the website dynamic.

2. **Economic Feasibility:** According to our business model, the aspects and scopes of this project is very feasible on the economic side.

   The deployment cost is one time, with a full team of experts in development. Most of the website's contents will be provided by users and problem setters themselves. Although our team will also arrange quality contents for our users throughout the years. Though it is possible to minimize development cost as we do not need to hire a developer to develop system but will have to bear some cost for deploying the system into a server. As we calculated:

   -Domain cost - 10 USD/year
   -Hosting cost - 20 USD/year
   -Server maintenance cost - 10 USD/year
   -SSL cost - 5 USD/year

   The revenue we seek are from companies that want to find and hire quality talent faster with online technical assessments through our reliable data of the users. Also from sponsors for our website.

3. **Organizational Feasibility:** Since we are integrating new and exciting features in our platform, along with a much better UI, it is expected that the project champions and senior management will support this project, and the users will be keen to solve problems in our website. Since companies will be able to hire from our website, they will be able to filter the candidates more accurately based on the points of the users.

Make a Recommendation:

Since our project is feasible from technological, economical and organizational point of view, we would like to move forward with this project, if we have your approval.

Conclusion:

We are new developers who are just learning how to create a complete software that will be feasible in every sense and generate a revenue from the stakeholders. We are not entirely familiar with some of the technologies that we are planning to use. We are hoping to get the project done, in spite of our lack of knowledge, that we are hoping will surely increase as we create the project. It is our dearest and most humble request that you see our mistakes in the eyes of forgiveness and guide us through the project so that we can develop our developing skills to make our project, Coding Cat, a complete and successful online judge.