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USER MANUAL

PROJECT NAME: ARCANE ARCADE

CLIENT: TONY VD LINDEN

TEAM NAME: TERABITES

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Contents

1	Introduction	2
2	Project Background	2
2.1	Problems Experienced	2
2.2	Arcane Arcade as the Solution	2
3	System Overview	3
4	System Configuration	3
5	System Usage	4
5.1	Administrative Use	4
5.1.1	User Management	4
5.1.2	Challenge Management	5
5.1.3	Level Management	5
5.1.4	Question Management	6
5.2	Candidate Use	6
5.2.1	Login	6
5.2.2	Answer Question	7
5.2.3	View Code Output	7
6	Troubleshooting	7
6.1	Administrative Problems	7
6.2	Candidate Problems	7

1 Introduction

The project is called *Arcane Arcade*, which references the esoteric language users will have to use, as well as the gamification approach to try and make it as fun as possible.

Arcane Arcade is a revolutionary system to be used by employers to determine the level of skills and classification of potential employees through the use of an esoteric language in a game-like environment. The company responsible for the idea behind the system is BBD and the team responsible for implementing it is team TeraBites.

This document presents the Arcane Arcade system, its uses and how it is to be put to use.

2 Project Background

This section outlines the background behind the project Arcane Arcade.

2.1 Problems Experienced

The software engineering industry has tried various models over the years to ascertain whether a prospective employee has the required skills or aptitude to be a valuable software developer. These range from automated online screening assessments that push the boundaries of the person's intellectual capability, to manually executed proprietary company tests using specific programming languages to test development competencies. Online assessments are popular and easy to execute, but lack the insight provided by manual and proprietary testing of how the candidate reasons, where manual and proprietary testing is time-consuming and expensive to execute. In addition, company proprietary tests become stale and are leaked into the industry reducing the value tests may have.

BBD has used both approaches over the years and has found that online assessments are adequate when the prospective employee has little to no professional development experience. This is however not enough to demonstrate software development capability for existing professional developers and the company was forced to create a programming test for this group of people. These days, it is becoming difficult to maintain a landscape for an array of different programming languages used by BBD, while ensuring that the quality is maintained.

2.2 Arcane Arcade as the Solution

The candidate is presented with a problem and must use an unfamiliar and custom esoteric programming language (esolang) to solve the problem. The test must make use of gamification principles such as making new keywords available that can be used in following challenges when a specific challenge is completed.

Each challenge is harder than the previous and all incorporate some programming principle such as general arithmetic, condition checking, iteration, recursion, functions and embedded functions. The platform must have the ability to interpret or compile the esolang and to allow the candidate to “run” the program. The platform must be available online or on a tablet device and be secure enough to disallow unauthorized use. The candidate will be emailed a link and a username to access the platform.

All the challenges are to be timed and all results and times must be persisted. Once the candidate completes the whole challenge or decides to stop before the last challenge, a final score is shown. The candidate cannot access the challenge again once it reaches this state. In addition to the challenge/game, an administrator must be able to manage users, questions, esolang keywords (dependent on time) and result online.

3 System Overview

The project is called the Arcane Arcade and the name references both gaming as well as esoteric (intended for or likely to be understood by only a small number of people with a specialized knowledge or interest, arcane: mysterious or understood by few) programming languages.

4 System Configuration

The system requires a Windows/Unix based host to run the server. This host must have the associated technologies installed (the installation of these technologies will be discussed below). The host must be connected to the internet in order to allow any required dependencies to be installed and set up for the operating system environment. The configuration of the server requires an active email account to facilitate communication between the system and end users.

End users will only require a PC equipped with a web browser such as Mozilla, Chrome or Internet Explorer, as well as an active internet connection. The types of data that will be communicated and stored will be in a PostgreSQL database. The challenges that are to be passed to the candidate’s system reside in the database, there will have to be retrieved from there to be communicated/displayed on the menu page. The levels and questions that the challenges entail will be stored too. The challenges that the system houses can be added to the home page by the administrator in order to populate the navigation bar, the actual dynamic pages and various other places in which these are displayed. The administrators are the only user who are able to retrieve the menu and challenge data, in order to edit or delete it. The candidate users will just be able to view the challenges on the menu page. The user’s sign up information will also be stored and will be communicated on the profile page of the user. Each user will only have access to their own information. The superuser, however, will be able to search for users and update their IDs or delete them from

the system. s. The superuser is the only user who be able to edit and add this information. Other settings that the superuser can configure, such as the system limit and the roles of the users will be stored and used for determining the privileges associated with the various roles and the checks done on the users' personal spending limits. The administrators will have access to the challenge history of each user in order to view their attempts and performance.

5 System Usage

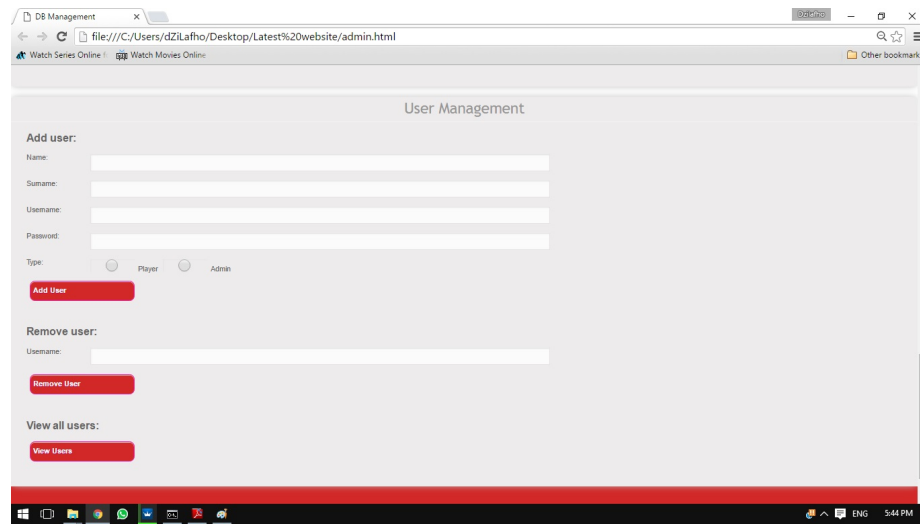
Arcane Arcade is primarily accessed through any web browser. The system has different pages that outline the functionalities that the different types of users can access. The users can be either administrators or candidates.

Administrators have global access to the whole system which also grants them management capabilities. The can modify the structure of the challenges and how the candidates interact with the system by disabling and enabling access, adding and removing challenges amongst others.

Candidates only have access to the challenges page and all-sub pages that can be found/clicked in that particular page.

5.1 Administrative Use

5.1.1 User Management



5.1.2 Challenge Management

The screenshot shows a web browser window with the address bar displaying a file path. The page header features the 'bbd combined intelligence' logo. The main content area is titled 'Challenge Management' and contains three sections: 'Add challenge:' with a text input for 'Challenge name' and an 'Add Challenge' button; 'Remove challenge:' with a text input for 'Challenge name' and a 'Remove Challenge' button; and 'View challenges:' with a 'View Challenges' button. The Windows taskbar at the bottom shows the time as 5:41 PM.

Challenge Management

Add challenge:

Challenge name:

Add Challenge

Remove challenge:

Challenge name:

Remove Challenge

View challenges:

View Challenges

5.1.3 Level Management

The screenshot shows a web browser window with the address bar displaying a file path. The page header features the 'bbd combined intelligence' logo. The main content area is titled 'Level Management' and contains three sections: 'Add level:' with text inputs for 'Level name' and 'Challenge under' and an 'Add Level' button; 'Remove level:' with a text input for 'Level name' and a 'Remove Level' button; and 'View Levels:' with a 'View Levels' button. The Windows taskbar at the bottom shows the time as 5:43 PM.

Level Management

Add level:

Level name:

Challenge under:

Add Level

Remove level:

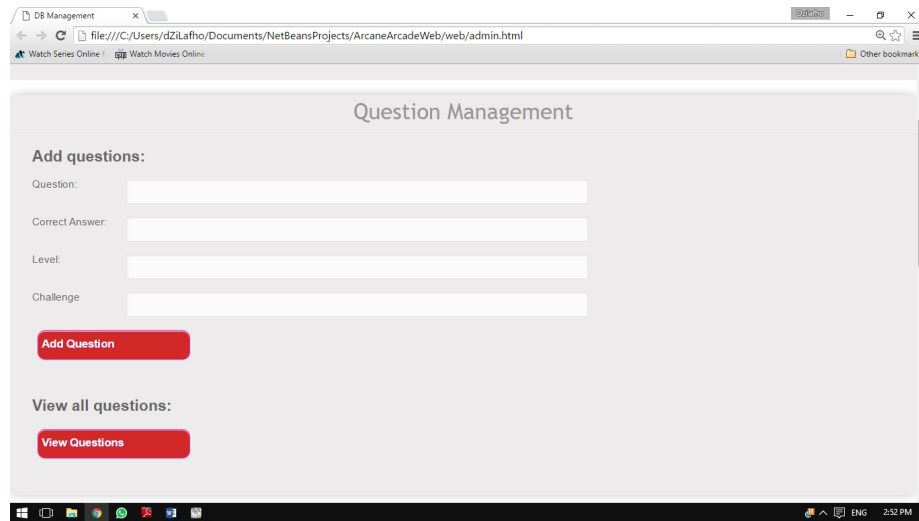
Level name:

Remove Level

View Levels:

View Levels

5.1.4 Question Management



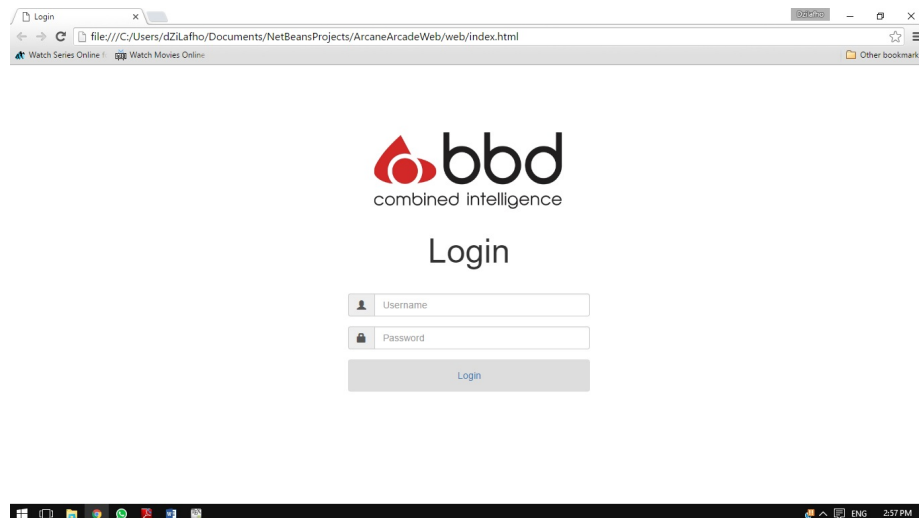
The screenshot shows a web browser window with the title "DB Management". The address bar displays the file path: `file:///C:/Users/dZiLafho/Documents/NetBeansProjects/ArcaneArcadeWeb/web/admin.html`. The page content is titled "Question Management" and features two main sections:

- Add questions:** This section contains four input fields labeled "Question:", "Correct Answer:", "Level:", and "Challenge:". Below these fields is a red button labeled "Add Question".
- View all questions:** This section contains a red button labeled "View Questions".

The Windows taskbar at the bottom shows the system clock as 2:52 PM and the language as ENG.

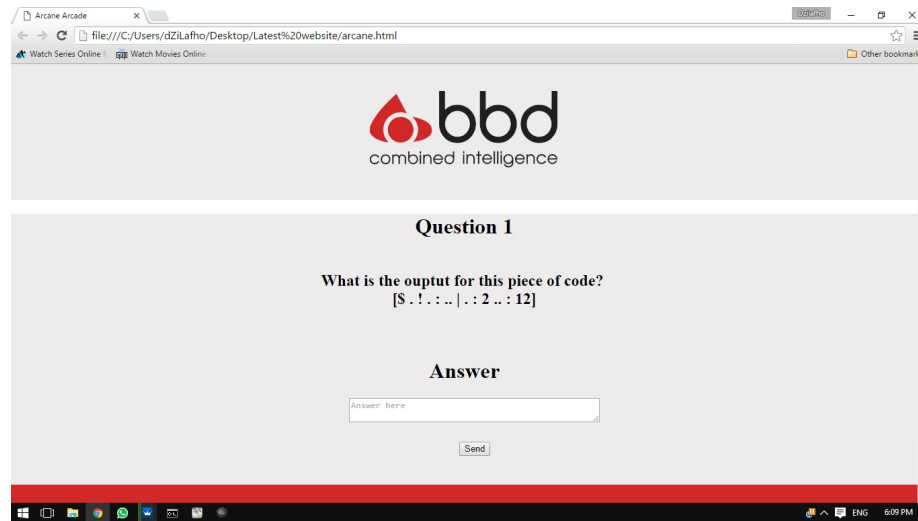
5.2 Candidate Use

5.2.1 Login

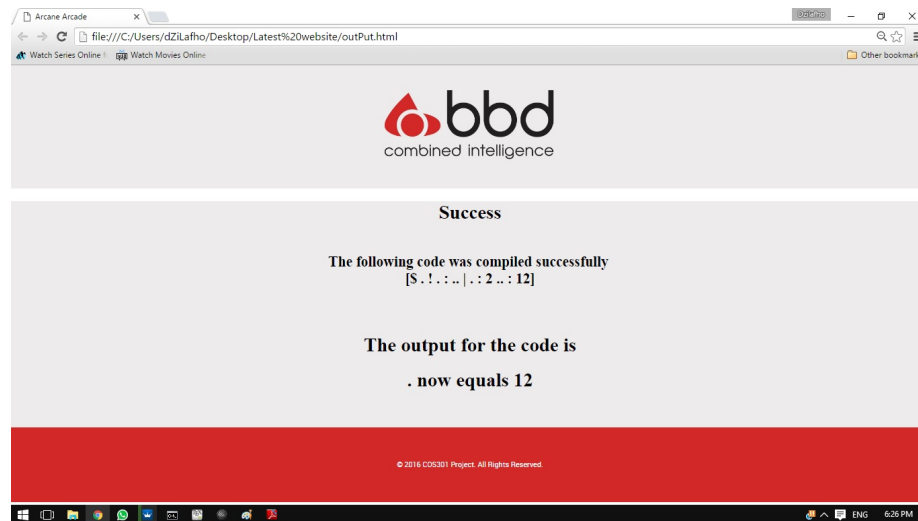


The screenshot shows a web browser window with the title "Login". The address bar displays the file path: `file:///C:/Users/dZiLafho/Documents/NetBeansProjects/ArcaneArcadeWeb/web/index.html`. The page features the "bbd combined intelligence" logo at the top. Below the logo, the word "Login" is displayed in a large font. Underneath, there are two input fields: "Username" and "Password", each preceded by a small icon (a person for username and a lock for password). A grey "Login" button is positioned below the password field. The Windows taskbar at the bottom shows the system clock as 2:57 PM and the language as ENG.

5.2.2 Answer Question



5.2.3 View Code Output



6 Troubleshooting

6.1 Administrative Problems

6.2 Candidate Problems