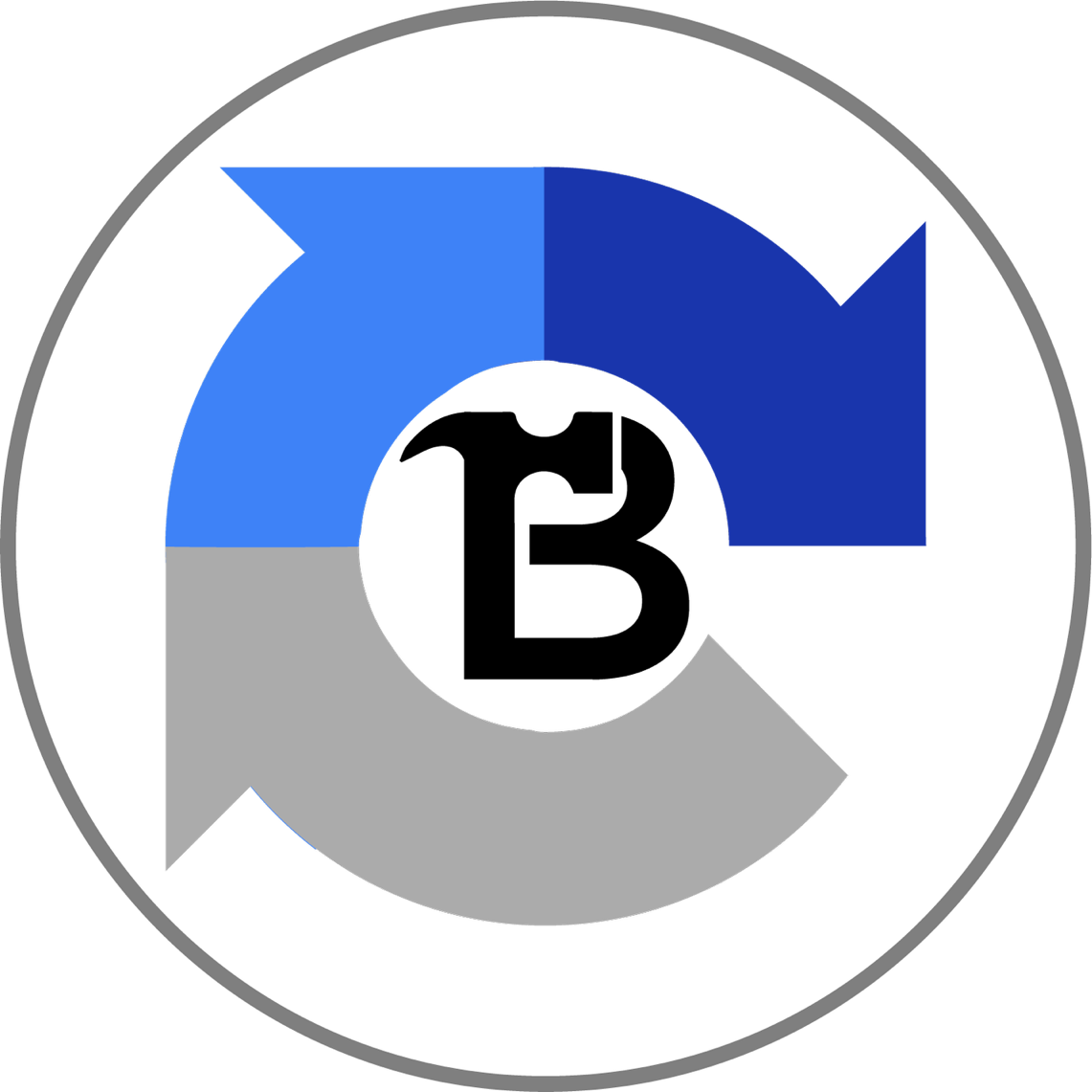
*Software Requirements Specification*

Version 3.0 – 19th May 2023



*Breaking Captcha – Hardhat Enterprises 2023*

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# 1. Introduction

## 1.1. Purpose

The purpose of this Software Requirements Specification (SRS) document is to comprehensively outline the requirements for the development of the Breaking Captcha tool. Breaking Captcha is an innovative software tool designed to automate the completion of reCAPTCHA questions, enhancing the efficiency and effectiveness of the CAPTCHA system. The primary objective of this tool is to serve as a valuable research instrument for identifying vulnerabilities in CAPTCHA mechanisms and contributing to their overall improvement and security.

## 1.2. Intended Audience

This document is primarily intended for the development team involved in the creation, testing, and deployment of the Breaking Captcha tool. Additionally, stakeholders, project managers, and other individuals engaged in the development process may also find this document useful for gaining insights into the project's requirements and goals.

## 1.3. Intended Use

Breaking Captcha is specifically designed as a research tool to automate the process of completing reCAPTCHA questions. By streamlining the completion of reCAPTCHAs, this tool significantly reduces the time and effort required by users, particularly in scenarios where multiple reCAPTCHAs need to be completed. This automation process will greatly facilitate our team's research endeavors by enabling the efficient exploration of CAPTCHA weaknesses and the development of enhanced security measures.

## 1.4. Product Scope

Breaking Captcha is a sophisticated software tool with the primary objective of automating the completion of Google reCAPTCHAs for research purposes. By providing a seamless and efficient solution, this tool aims to enhance the overall effectiveness and reliability of CAPTCHA systems.

## 1.5. Definitions and Acronyms

reCAPTCHA: a Google security feature requiring users to prove their humanity before being allowed access to certain websites.

Breaking Captcha: the in-development software tool used to automatically complete Google reCAPTCHAs.

# 2. Overall Description

## 2.1. User Needs

The fundamental user need that Breaking Captcha addresses is the automation of reCAPTCHA question completion. This functionality is crucial for conducting thorough research and analysis of CAPTCHA mechanisms. By automating the process, this tool significantly reduces the time and effort required by users, enabling them to efficiently complete numerous reCAPTCHAs.

## 2.2. Assumptions and Dependencies

Breaking Captcha operates under the assumption that users have a stable internet connection and will receive Google reCAPTCHAs from relevant websites that are compatible with the tool's functionalities.

# 3. System Features and Requirements

## 3.1. Functional Requirements

Breaking Captcha is expected to seamlessly handle a diverse range of reCAPTCHA question formats, including text-based, image-based, voice-based, and video-based challenges.

## 3.2. External Interface Requirements

Breaking Captcha should be compatible with all major web browsers, including but not limited to Chrome and Safari, ensuring a broad range of users can utilize the tool without any compatibility issues.

## 3.3. System Features

Breaking CAPTCHA will utilise a NoSQL database specifically MongoDB to build the application.

Breaking CAPTCHA should use a simple, user-friendly interface.

Breaking CAPTCHA should save previously completed CAPTCHAs in a database for future uses.

## 3.4. Nonfunctional Requirements

Breaking CAPTCHA should maintain a high level of accuracy when completing reCAPTCHAs.

Breaking CATPCHA should complete reCAPTCHA swiftly and efficiency.

Breaking CATPCHA should be able to handle multiple reCAPTCHA questions simultaneously.

Breaking CAPTCHA should ensure its own security and those of its users.

# 4. System Constraints

## 4.1. Time Constraints

The development team must adhere to the agreed-upon project timeline to ensure timely delivery of the Breaking Captcha tool, meeting the users' needs and expectations within the defined time frame.

## 4.2. Technical Constraints

Breaking Captcha must be developed using appropriate and suitable technologies that effectively address the complexity of solving reCAPTCHA questions. The tool should be efficient and performant while maintaining a high level of accuracy.

## 4.3. Resource Constraints

The development team should optimize the utilization of available resources, such as handover documents and project management tools, to ensure the successful and efficient development of the Breaking Captcha tool.

# 5. Assumptions and Constraints

## 5.1. Assumptions

Users have basic knowledge of reCAPTCHA and its purpose.

Users have stable internet connectivity to receive reCAPTCHA challenges.

## 5.2. Constraints

The Breaking Captcha tool must be compatible with the current versions of major web browsers, including Chrome, Safari, Firefox, and Edge.

The development team must work within the allocated budget and adhere to any financial constraints defined for the project.

The Breaking Captcha tool must comply with the reCAPTCHA terms of service and guidelines set by Google.

# 6. Performance Requirements

## 6.1. Maximum Response Time

To provide a seamless user experience, Breaking Captcha aims to achieve a maximum response time of under 10 seconds for completing a reCAPTCHA question, ensuring swift and efficient processing.

## 6.2. Simultaneous Users

Breaking Captcha should be designed to accommodate multiple users concurrently. The tool's architecture should be capable of handling a significant volume of users simultaneously, maintaining optimal performance and responsiveness.

## 6.3. Minimum Accuracy

To deliver reliable results, Breaking Captcha should maintain a minimum accuracy level of 90% or higher when completing reCAPTCHAs, ensuring that the majority of challenges are solved correctly.

# 7. Quality Attributes

## 7.1. Reliability

Breaking Captcha must demonstrate a high degree of reliability in completing users' reCAPTCHA questions accurately and consistently. The tool should also ensure the reliability of result generation and delivery.

## 7.2. Maintainability

To stay up to date with evolving reCAPTCHA questions, Breaking Captcha should prioritize maintainability. Regular updates and adaptations should be implemented to ensure the tool remains effective and capable of solving the latest CAPTCHA challenges.

## 7.3. Scalability

Breaking Captcha should be designed to handle a large number of simultaneous users without compromising performance. The tool's architecture and infrastructure should be scalable to accommodate increasing user demand.

## 7.4. Usability

Breaking Captcha should provide a user-friendly interface that is intuitive and easy to navigate. The tool should be accessible to users with varying levels of technical expertise, minimizing the learning curve and maximizing usability.

## 7.5. Security

To ensure user privacy and data protection, Breaking Captcha must comply with relevant data protection laws and industry best practices. The tool should implement robust security measures to safeguard user information and provide a secure environment for its users.

## 7.6. Portability

Breaking Captcha should be designed to run on multiple devices, ensuring its portability and accessibility across various platforms and operating systems.

# 8. Risk Management

## 8.1. Risks & Mitigations

Inadequate accuracy in solving reCAPTCHA challenges, leading to incorrect results 🡪 Implement thorough testing and validation procedures to ensure a high level of accuracy.

Legal and compliance issues regarding the automation of reCAPTCHA completion 🡪 Conduct legal research and ensure compliance with relevant laws and regulations, such as data privacy and user consent requirements.

Security vulnerabilities that could be exploited to bypass reCAPTCHA protection 🡪 Implement robust security measures to protect user data and ensure the tool's resistance to potential attacks.

# 9. Test and Validation

## 9.1. Unit Testing

Develop unit tests to verify the functionality of individual components or modules of the Breaking Captcha tool.

## 9.2. Integration Testing

Conduct integration testing to ensure seamless integration of various modules and components within the Breaking Captcha tool.

## 9.3. User Acceptance Testing

Collaborate with users and stakeholders to perform user acceptance testing, validating the tool's usability and meeting the defined requirements.

## 9.4. Performance Testing

Conduct performance testing to measure the Breaking Captcha tool's response time and its ability to handle multiple concurrent reCAPTCHA challenges.

## 9.5. Validation Criteria

Successful validation will be achieved if the tool demonstrates a high level of accuracy in solving reCAPTCHA challenges, maintains usability, and complies with the defined requirements.

# 10. User Documentation

## 10.1. User Manual

Breaking Captcha should provide a comprehensive user manual that details the tool's features, functionality, and instructions for effectively utilizing its capabilities.

## 10.2. FAQs

An FAQ section should be included to address commonly asked questions, providing users with quick answers and solutions to potential queries or concerns.

## 10.3. Troubleshooting

To assist users in resolving any issues they may encounter, a troubleshooting section should be made available. This resource will guide users through problem-solving steps, helping them overcome potential obstacles effectively.

## 10.4. Tutorials

Breaking Captcha should offer tutorials to guide users through the process of using the tool. These step-by-step instructions will enhance user understanding and proficiency in utilizing the Breaking Captcha software.

## 10.5. Online Help

As the development progresses, an online help system can be implemented to provide users with additional assistance and guidance, augmenting their overall experience with Breaking Captcha.

# 11. Training Requirements

## 11.1. User Training

The development team should conduct comprehensive training sessions to ensure users are proficient in utilizing the Breaking Captcha tool effectively. These training sessions will provide users with the necessary knowledge and skills to maximize the tool's potential.

## 11.2. Certification Requirements

To ensure users possess a solid understanding of the tool's features and functionalities, the development team should define certification requirements. Users who successfully meet these requirements will be certified as proficient Breaking Captcha users.

# 12. Maintenance and Support

## 12.1. Technical Support Requirements

The development team should establish technical support channels to address users' queries, concerns, and technical issues promptly. These support mechanisms will ensure users receive timely assistance whenever needed.

## 12.2. Software Updates

Regular software updates and patches should be provided to keep the Breaking Captcha tool up to date with the latest advancements in reCAPTCHA challenges and security measures. These updates will ensure the tool remains functional and effective over time.

## 12.3. System Backups

To safeguard user data and ensure its integrity, the development team must define backup and recovery procedures. Regular system backups should be performed to prevent data loss and facilitate swift recovery in case of any unforeseen incidents.

# 13. Legal Requirements

## 13.1. Data Privacy Laws

The development team must comply with data privacy laws and regulations to protect users' personal information and ensure the secure handling of data collected during the Breaking Captcha process.

## 13.2. Copyright Laws

The development team must adhere to copyright laws and regulations, respecting intellectual property rights when developing and distributing the Breaking Captcha tool.

## 13.3. Accessibility Regulations

Breaking Captcha should be designed and developed to comply with accessibility regulations, ensuring that users with disabilities can access and utilize the tool without any barriers.