

10/28/2024

CIPHER HUNT

Capture the Flag



Subash Shahi

SOFTWARE ENGINEER | CTF CREATOR

CipherHunt

The "Cipher Hunt" project is a Capture The Flag (CTF) challenge platform designed to provide hands-on cybersecurity experience to students, developers, and engineers.

- Users register as participants, log in, and tackle challenges in categories like forensics, web, Linux, pwn, and reverse engineering, requiring technical skills to find and submit challenge flags.
- Participants will also exploit cybersecurity flaws and vulnerabilities within the challenges to retrieve the flags. The platform supports multiple participants, with scoring based on performance, and the highest scorer declared the winner.
- It targets universities offering cybersecurity courses and IT companies, with future plans to introduce logical thinking games for school students to foster basic cybersecurity knowledge.

1. Participant Features

1.1 Signup

- **User Registration:** Users can sign up by providing the following information:
 - Email Address
 - Password
 - First Name
 - Last Name
 - Mobile Number
- **Email Validation:** Users can only sign up if their email address does not already exist in the system.
- **Notification:** Upon successful signup, users will receive a welcome notification.

1.2 Login

- **Login Credentials:** Users must enter their registered email address and password to log in.
- **Password Recovery:** Users can recover their password via a "Forgot Password" page, requiring them to verify an OTP sent to their email address.

1.3 Start CTF Challenge

- **Challenge Access:** After successful login, users are redirected to the CTF challenges page.

- **Challenge Categories:** Users can view challenges categorized as:
 - Forensic
 - Web
 - Reversing
 - Cryptography
- **Starting a Challenge:** Users can start a challenge by clicking the "Start Challenge" button, which redirects them to the challenge detail page.
- **Challenge Details:** Users can view:
 - Flag submission form
 - Challenge score
- **Flag Submission:** Upon successful flag submission, users receive a "Congratulations" message along with a celebration confetti effect. The score is then added to their scoreboard.

1.4 Challenge History

- **History Overview:** Users can view their solved challenges and the total score they have earned.

1.5 Scoreboard

- **Ranking Display:** Users can view a scoreboard ranking all participants based on their scores, from highest to lowest.

1.6 Start Challenge Instance

- **Docker Challenges:** Most challenges are hosted using Docker containers with individual ports in isolated environments.
- **Challenge Duration:** Users can start a Docker server application for 30 minutes, after which a link to the challenge website will be provided.
- **Flag Retrieval:** Users must find flags within the web application and submit them on the CipherHunt Challenge page.

2. Cpanel User Features

2.1 User Management

- **New User Creation:** Cpanel users can create new user accounts.

2.2 Login

- **Authentication:** Cpanel users log in using a username and password.
- **2-Factor Authentication:**
 - If enabled, users must provide an OTP from an Authenticator app.
 - Accounts are locked after five incorrect password attempts to prevent unauthorized access.

2.3 Two-Factor Authentication Management

- **Enabling 2FA:** An admin user can enable 2FA for other users from the user detail page.
- **Registration:** 2FA-enabled users must register their Authenticator apps (e.g., Microsoft Authenticator, Google Authenticator).

2.4 Change Password

- **Password Update:** Cpanel users can change their passwords on a dedicated page.

2.5 Dashboard

- **Participant Insights:** Cpanel users can view:
 - Graph of new participants registered in the last week
 - Total number of participants and challenges
 - Number of unverified challenges
- **User Management:** List of Cpanel users and system logs.

2.6 Categories and Challenges Management

- **Category Management:** Users can create, edit, and delete category names and descriptions.
- **Challenge Creation:**
 - Users can create new challenges, with flag values and earning points stored.

- Newly created challenges are marked as unverified and cannot be verified by the creator.
- **Challenge Verification:** Other users can verify unverified challenges from the dashboard.
- **Challenge Activation:** Users can enable or disable challenges; only verified and enabled challenges will be shown to participants.

2.7 Email Template Management

- **Template Management:** Administrators can update email content for various events, including:
 - New participant registration
 - Forgot password requests
 - Email verification
- **Template Editing:** Cpanel users can add and edit email templates.

2.8 System Configuration

- **System Settings:** Cpanel users can update various system configurations, including:
 - API credentials and URLs
 - Email notification settings
 - System name, address, email, logo, and logo dimensions
 - Theme color, currency, country code, mobile length, and timezone.