Development of a Low-cost Capture The Flag (CTF) Online Platform using Google Applications

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1. INTRODUCTION

Online classes, Government and Private transactions are on the rise in internet utilization since the Global Pandemic started last 2019. The need to start or improve the capability of Computer Studies graduates in terms of Computer or Cyber Security is of great importance specially when they become future catalyst to protect the companies they will be employed from malicious hackers or cyber-attacks. Methods in learning about some cyber security knowledge areas could be done through lecture or discussions in some courses or subjects offered in the respective curriculums or when students join Capture The Flag (CTF) competitions organized by their professors or other companies and organizations. However the cost of organizing and hosting an event in relation to technical preparations both in Hardware and Software can be costly. According to CSOonline.com CTFd (https://ctfd.io/) is the most widely used platform by security vendors, colleges and hacking groups. It includes the scoreboard and other infrastructure of a contest. You just add the actual challenges, which are the puzzles solved by the users, and their scores [1]. The pricing for CTFd is divided into three categories namely: basic, plus, and professional. Basic Plan currently has a price of $50 per month which includes features such as unlimited users, unique ctfd.io subdomain, secure tls/ssl connection, Preconfigured email settings, 250k monthly page views, 5 container servers, Free access to custom themes, Unlockable challenges and Dynamic Value challenges. Plus Plan has a price of $100 per month with increased features while Professional Plan has a price of $300 per month [2]. Other CTF online event platforms require the organizer to install the repository in their systems. Examples are Facebook's CTF Platform [3], Mellivora [4], NightShade [5], and LibreCTF[6].

This paper focuses on developing a free CTF online platform using Google Applications and Free website hosting Infinityfree.net. Specifically a comparative analysis between the proposed free platform and the subscription based will be based on the CTFd basic plan features as well as Essential Requirements of a CTF Server (Based on CTF's I have experienced). A feedback survey will also be analyzed when respondents have tried the beta version of the free platform.

2. REVIEW OF RELATED STUDIES

2.1. Cybersecurity Trainings and Methods
2.2. What is Capture The Flag (CTF)
2.3.CTF Studies
    2.3.1. Valdemar
    2.3.2.
2.4.Requisites of a CTF Hosting Server
2.5. CTF Online Event Organizers
2.6.CTF Online Platforms
    2.6.1. Cloud Based
    2.6.2. Local Installation Based

2.7.Google Applications
2.8.Free Internet Hosting

3. CONCEPTUAL FRAMEWORK

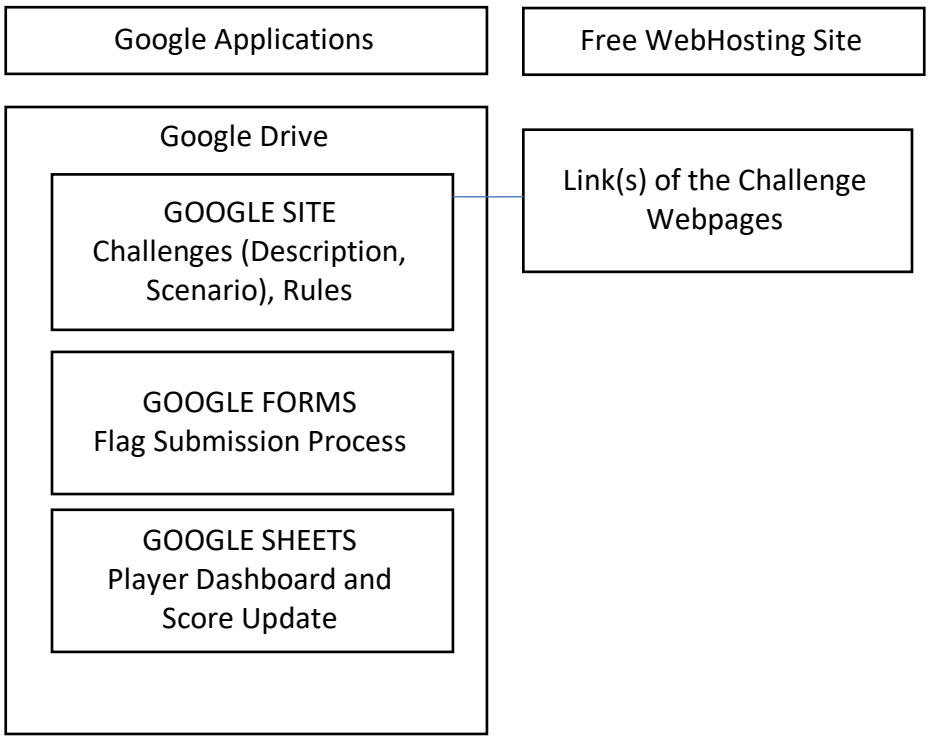

Figure 1. CTF Server Using Google Applications & Free Web Hosting

4. METHODOLOGY

1. Planning and Creating the Google Drive Folder
2. Developing the Google Site
3. Developing the Google Forms
4. Developing the Google Sheets
5. Creating the Player Post-Event Survey Form
6. Beta Version:
    a. Sites.google.com/view/camelotctf

REFERENCES

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4. https://github.com/Nakiami/mellivora
5. https://github.com/UnrealAkama/NightShade
6. https://github.com/easyctf/librectf
7.