Proposal Draft 2

Daniel Tomov

Overview

Our goal with this project is to create an online program that will introduce and teach students about Python to gain their interest in it. Python is an excellent programming language to have beginners start with. It is easy to understand and is a very desirable skill as it is used in many fields of STEM such as programming a robot, creating a website for a company, designing security defenses, and many other applications. Coding also encourages critical thinking because there are multiple ways to code a program, but there is only one way the code will be the most efficient. We will make our website by using the Flask module of Python and Python to create the website. We chose Python because of our intermediate knowledge and its extensive documentation on the Internet. The specific objectives we have set during the planning process of this project are as follows: get a working website, create a layout for the website, create a login form and sessions, implement the layout, add code submission and execution, and save user progression in a database. The overall objective is to see an increase in the amount of students interested in the STEM field while specifically targeting the cybersecurity field. However, we can not measure this metric because it requires waiting a long time. So we will task randomly selected students who have not used Python to complete the course. While there are other online programs that teach Python, ours is different because it does not track users and does not show any advertisements. The whole course is free; there are no paid plans and therefore no paywalls for areas of the course.

Intellectual Merit

As the use of technology continues to grow everyday, the need for people in IT continues to grow as well. The amount of open job positions in the cybersecurity field alone are over 750,000 with 60,000 of those being in Virginia (Cyberseek). It is recommended that “cybersecurity professionals learn at least one object-oriented programming language”

(Cybersecurity Guide). Python is both an object-oriented programming language and can "perform malware analysis, create intrusion detection systems, and send TCP packets to machines without third-party tools" (Cybersecurity Guide). Our project will increase the amount of people going into the cybersecurity field, decreasing the amount of job openings. This project will also transform the field because it will increase the programming knowledge of the average cybersecurity employee. By teaching Python to those who are interested in the cybersecurity field, we are setting them up for success, along with the business that they work for. By giving a business employees who are educated and have skills that are wanted in the field, the business will have more success because they have employees who can achieve more with less help and in a shorter amount of time. In addition, if we can reach younger students, they can learn how to code and will therefore have more time to design new, impactful products. This single project will impact a large amount of regions including the economics, individual knowledge, and with public knowledge and advancement. Lastly, knowing one programming language helps to understand many others because many of them have common syntax.

Broader Impacts

The desired social outcome of our project is to increase the amount of STEM professionals in career positions across the world. This will benefit society because the STEM field is growing exponentially and technology continues to encompass our daily lives. In a broader scope, our project gives users the opportunity to start their career in STEM from an early age. This will make it easier for them in the future when they continue to pursue this career. From programmers to biology researchers to cybersecurity professionals, Python can simulate bacteria growth, solve complex math problems, calculate the forces in a construction, and create a communication layer between devices. Python is used across many fields of STEM, and its uses will continue to grow.

References

Cybersecurity Supply And Demand Heat Map. (n.d.). Retrieved from https://www.cyberseek.org/heatmap.html

A guide to coding for cybersecurity. (2022, April 21). Retrieved from https://cybersecurityguide.org/resources/coding-for-cybersecurity