

Planning and Implementing a Successful NSA-NSF GenCyber Summer Cyber Academy

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Abstract

The GenCyber program is jointly sponsored by the National Security Agency (NSA) and the National Science Foundation (NSF) to help faculty and cybersecurity experts provide summer cybersecurity camp experiences for K-12 students and teachers. The main objective of the program is to attract, educate, and motivate a new generation of young men and women to help address the nationwide shortage of trained cybersecurity professionals. The curriculum is flexible and centers on ten cybersecurity first principles. Currently, GenCyber provides cyber camp options for three types of audiences: students, teachers, and a combination of both teachers and students. In 2016, over 120 GenCyber camps were funded, serving 5,000+ students and teachers, and the NSA hopes to double the program in 2017. GenCyber camps can be offered at colleges, universities, public or private school systems, or non-profit institutions. The purpose of this paper is to describe the GenCyber program, provide lessons learned from a successful program implementation, and encourage PI's to plan and implement a GenCyber summer cyber academy.

Disciplines

Information Security | Management Information Systems | Secondary Education and Teaching | Technology and Innovation

Comments

Only an abstract and summary are pushed in the Proceedings. The complete article can be found in the Journal of Cybersecurity Education Research and Practice.

SUMMARY

The GenCyber program is jointly sponsored by the National Security Agency (NSA) and the National Science Foundation (NSF) to help faculty and cybersecurity experts inspire and prepare young Americans in an effort to fill the critical shortage of current and future experts in the constantly evolving field of cybersecurity. The main objective of the program is to attract, educate, and motivate a new generation of young men and women to help address the nationwide shortage of trained cybersecurity professionals. The GenCyber program's curriculum is flexible and centers on ten cybersecurity first principles: process isolation, domain separation, resource encapsulation, information hiding, minimization, simplicity of design, least privilege, layering, and modularization. Each K-12 summer program is expected to create opportunities for participants to gain a thorough understanding of cybersecurity principles and practices.

GenCyber provides cyber camp options for three types of audiences: students, teachers, and a combination of both teachers and students. Each GenCyber participating entity can apply to host one or more camp types. The curriculum and the evaluation criteria are similar for all camp types. The program requires a site visit for every funded GenCyber project, usually on the middle day of instruction (Wednesday for a one-week camp, Friday of the first week for two-week programs, etc.). The purpose of the site visit is to serve as a formative evaluation, analyzing learning materials, teacher effectiveness, and so on. The spirit of the evaluation is to facilitate and generate best practices to enhance individual camps and the program as a whole. The site visit team includes educators and an NSA representative.

In 2016, over 120 GenCyber camps were funded, serving 5,000+ students and teachers, and the NSA hopes to double the program in 2017. GenCyber camps can be offered at colleges, universities, public or private school systems, or non-profit institutions. Healthy internal communication and strong administrative support are important prerequisites for a successful program. The purpose of this paper is to describe the GenCyber program, provide lessons learned from a successful program implementation, and encourage PI's to plan and implement a GenCyber summer cyber academy. In addition, the paper also briefly presents research conducted to evaluate the impact of the GenCyber program on students' future career paths.