

GenCyber Bootcamp Final Report



HIGH SCHOOL CAMP June 20–24 | MIDDLE SCHOOL CAMP July 25–29

Dr. Dipankar Dasgupta, GenCyber Program Director
Mr. Kriangsiri “Top” Malasri, GenCyber Lead Instructor

Executive Summary

- 1) Provide a brief description of the program (including the focus and theme of the program, target audience, size and scope of the program, etc.)**

The University of Memphis held two one-week GenCyber camps over Summer 2016: a high school camp from June 20-24, and a middle school camp from July 25-29. The camps cover various aspects of Cyber Hygiene and students learned about privacy, security, and safe browsing while on the internet. They were introduced to cyber ethics and engaged in hands-on sessions that allowed them to experience real-world data security issues. In particular, agendas were centered on teaching first principles of cyber security while engaging them in hands-on exercises on real-world security issues. Students had opportunities to meet cyber experts and industry professionals. Both camps met from 9:00 am-4:30 pm each day during the week and culminated in a team final project that students presented on the last day of the camp. Parents and other family members were invited to attend these presentations, and we had several industry volunteers help judge the student projects. These camps also provided a unique opportunity for school students to learn about Cyber programs (educational and research) at the University of Memphis, a nationally-designated Center for Academic Excellence in Information Assurance.

We used several recruitment tools that we believed helped us to service 67 students this summer. Our recruitment tools included posting flyers on several U of M event websites, email blasts to local schools, a publicity media release from our communications department, and a televised solicitation on a local news station. The program received great response and several parents have already expressed interested in next year's camp sessions.

Part of our grant funds were used to provide breakfast, lunch, and snacks every day for camp attendees. Attendees also received a camp T-shirt, USB stick, and full-color passport booklet containing various activities related to the ten first principles of cyber security. The passport to

Cyber Security booklet was developed based on a design from Dakota State University.

2) Did the actual program align with the program proposal?

Our program aligned well with the original GenCyber proposal submission. We made some minor changes in the actual program compared to the program proposal, due partly to a last minute change in the lead instructor. (The original lead instructor accepted a job offer out of town and was no longer available to participate). However, the gist of the proposal remained the same.

3) If you made any changes, what changes were made, and why were the changes made?

The specific changes made were:

- More emphasis on directly teaching the ten first principles of cyber security, based on feedback from the GenCyber spring meeting.
- Less technical content in the high school camp, to improve accessibility to students from differing academic backgrounds. We did maintain a small programming component to introduce students to the idea of writing code.
- Fewer assessments completed by students. Given the limited time span of the camps, we felt that it would be best to have students focus on the camp experience itself rather than completing surveys. We condensed the originally planned surveys to a single post-assessment for the high school camp, and a single pre- and single post-assessment for the middle school camp. The bulk of assessment happened through the students' final project presentations, and instructor interactions with students as they worked on their projects.
- We omitted the proposed field trip to the Cloud 901 teen space at our public library. We made this change to give students more time during the camp to engage with cyber security professionals such as:
- Special Agent Timothy Marsh, transferred to the FBI Memphis Division in July 2015 and serves as the InfraGard Coordinator. He investigates violations of law affiliated with Cyber and Counterintelligence issues.
- Dr. Wiam Younes is the Information Security Training and Awareness Coordinator and adjunct faculty at Carnegie Mellon University Heinz College. Younes developed cyber security awareness content for K-12 constituents in the US. Her mission is to increase awareness of cybersecurity issues for K-12 students.
- Dr. Lan Wang, Chair and Associate Professor of Computer Science at the University of Memphis, has an impressive career in networking and protocol security. She received several major NSF research grants; including a \$7.9 million grant for a collaborative project called "Named Data Networking". She also promotes female participation in computer science and supports those types of programs in her department.

- We also wanted to take advantage of the educational opportunities on our beautiful campus, and students toured our state of the art library facilities, data center, and one of newest facilities on our campus, the FedEx Institute of Technology.

Enrollment

Curriculum Template (Appendix A)									
Institution:	University of Memphis								
Description of Camp	Educate students on first principles of cyber security, career opportunities and bring awareness of the importance of data security and safe web browsing.								
Program Director	Dr. Dipankar Dasgupta								
Type of Camp:	Teacher:			Student:		X	Combined:		
Number of Targeted Participants:	Teacher:			Student:		x	Boys: 30 Girls: 30		
Grade(s) of Participants:	6-8:		41	9-12:		26			
Date of camp:	High School Session: June 20-24, Middle School Session: July 25-29								
Observation Date	HS Observation: June 22 nd , MS Observation: July 27								
Site Visit Occurred on day #	Third Day for both sessions								
Number of participants	HS- 22 MS- 41			Number of Registered participants		HS- 26 MS- 45	Number of Observed participants		HS- 22 MS- 41
Camp Setting:	Residential:			NonResidential:		X	Distance/On-Line Comp		
Ratio of staff to student:	HS Ratio – 1 to 5 (all volunteers were not present during each session) MS Ratio – 1 to 7 (all volunteers were not present during each session)								

<p>Camp Overview and Theme</p> <p><i>In a paragraph describe what will participants experience and learn in camp.</i></p>	<p>The 2016 GenCyber Bootcamp introduced students to the first principles of cyber security by using interactive games such as Jeopardy, Kahoots, GenCyber cards and the Passport to Cyber Security. Campers were able to hear from cyber security professionals and engage in dialogue about their aspirations to gain more knowledge about the field.</p>
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Program Outcomes

1) What did participants learn in this program? Identify three to five learning outcomes from your proposal.

Our learning outcomes for both camps can be summarized in three points:

1. To introduce the ten first principles of cyber security
2. To improve awareness of cyber security careers
3. To encourage team-based critical thinking and problem solving skills via a drag-and-drop visual programming tool

In each camp, 10-12 hours of lecture and exercise time was devoted to covering the ten first principles. Activities included working through exercises in the Dakota State passport booklet, playing a Jeopardy game with the students, and using interactive quizzes created with the Kahoot website.

Awareness of cyber security careers was covered in each camp by several items:

- U of M faculty and graduate/undergraduate students shared some of their research projects
- Guest speakers from industry and government
- Facility tours – about 2 hours during each camp were spent visiting the university data center, library, and research labs
- Day of Cyber – 2-3 hours were spent during each camp having students participate in web-based career exploration activities

Finally, team-based critical thinking and problem solving skills were developed during the final project. Students worked in teams of 3-4 to develop a security related project, which they presented to fellow camp attendees and family members on the last day of the camp. In the high school camp, students used App Inventor to create their own security related Android phone app. In the middle school camp, students used Scratch to tell a security related story and/or develop a security related game.

2) If your program provided hands-on activities, how did the activities contribute to learning and what evidence do you have to confirm that learning occurred? If not applicable, please type N/A.

There were a number of hands-on activities to reinforce learning objectives which also included team projects. As evidenced by the student presentations on the last day of the camp, all teams were able to learn the software and use it to create something unique.

Dr. Judy Simon, professor in the Fogelman College of Business, presented information to students about cyber ethics and privacy issues. This presentation was very successful in helping students realize the potential danger of sharing personal information on social media. Several examples of cyber bullying and innocent online communication that resulted in people meeting strangers and being abducted as a result were discussed. She challenged students to write down their perspective on ethics and plagiarism; and then asked them how they related to cyber ethics. Students were surprised that they had the right ideas about these concepts.

3) Please provide any anecdotal information on any plans your students may have to continue their cyber security studies. (i.e. additional camps, course in the school)

One camp attendee was very interested in taking some classes and learning more from the U of M student assistants regarding their knowledge of programming. Information was shared with this attendee, and he plans to follow up and join some of the U of M students' ACM chapter meetings. Other attendees commented that the camp helped them to realize their potential, and we hope to see them as computer science majors in the near future.

4) How many hours of professional development activities occurred for your instructional staff preprogram, during the program, and post program?

There were several organizational meetings occurred since the grant was awarded with core members of the team (Director, Lead Instructor and the Camp administrator). We then had a series of meetings with other members of the cyber security center and developed a list of hands-on exercises appropriate for the two different groups. In addition, we involved a good number of our graduate and undergraduate students to serve as volunteers and prior to each camp, we met to discuss division of labor, organizational issues, etc. An estimated total of 10 hours was used to prep volunteers and instructors.

5) To what extent do you feel your program implemented the GenCyber endorsed principles "Cyber Ops First Principles"?

We introduced all ten principles of cyber security first principles as the main component of our camp along with some encryption/decryption games for High school camp. All activities focused on students learning of best security practices and receiving instant feedback on what principles were learned each day.

As mentioned above, 10-12 hours of contact time was devoted during each camp directly to covering all ten first principles, using a variety of real-world scenarios. The lecture time was spread throughout the week to help with students' retention of the information.

Hardware/Software

Brief description of hardware and software being used during the program.

Hardware

The camps were held in a variety of computer labs around the University of Memphis campus, with guest accounts set up for the students. No special hardware was used for the camp.

Software

- Web-based drag-and-drop programming tools (App Inventor for high school students, Scratch for middle school students)
- Web-based scavenger hunt developed by a U of M graduate student, where players navigated around a campus map by answering security related questions.
- Java programming to do simple encryption and decryption with the Caesar cipher (high school camp only). Encryption/decryption game developed using the Unreal 3D engine by U of M students.
- Different website were used (such as Kahoot) to conceptualize Cyber Ops First Principles.

Reflections

- 1) What aspects of the program worked well?
-Students loved to participate in interactive games that test their knowledge. In particular, Encryption/decryption game, Kahoots, Jeopardy, Passport games and Deck of Card were a big success for both camps.
- 2) How did you deal with challenges that your program encountered?
-Middle school participants were rambunctious during certain activities. Student volunteers were on hand to redirect students to more appropriate behavior. Parents arrived late to pick-up their students; timing issues were resolved after providing firm instructions about pick-up times.
- 3) To what extent do you feel that your program contributed to the goal of GenCyber to increase the number of students interested in the cyber security field?
-The success of the program is undeniable; as we had great response/ participation from both camps. The games, presentations, and industry professionals really allowed the students to see they can achieve their career goals with focus and ambition to achieve. Information about the undergraduate opportunities were provided to the high school students. Many responded in a positive manner about choosing the University of Memphis for their undergraduate study.
- 4) Which of the GenCyber endorsed principles “Cyber Ops First Principles” did you implement most effectively? Which principle was the most challenging to implement? Please explain your response.

We tried to cover all ten principles during both camps. We felt that information hiding was the easiest to explain and implement, as students could readily relate to the concept of encryption. Virtually everyone was familiar with the concept of hiding sensitive information like credit card numbers when performing online transactions.

The most challenging principles may have been minimization and simplicity of design. Although they are straightforward to understand individually, they are similar enough that many students did not clearly distinguish between the two.

- 5) What have you learned about the GenCyber experience?
 - More paid staff will be needed for student engagement, assistance with administrative tasks, and classroom management.
- 6) What unique feature of your program would you like to share with other GenCyber programs?
 - We felt that our coverage of encryption and decryption during the high school camp was unique. We introduced the concept to students via several methods: a traditional lecture covering the Caesar cipher, a programming demo to show how the encryption/decryption process could be automated using code, and an interactive game where players had to solve cryptography puzzles in a 3D environment. The game was developed by U of M students using the Unreal engine.
- 7) If you were to offer another GenCyber program, what would you do differently?
 - Due to the success of our first Gencyber Camp; we are interested in hosting a student/teacher combination camp. We will ask the 2016 GenCyber students to come back and provide their perspective to the incoming campers. We would establish a budget to compensate lead teachers to participate in student interaction and classroom management in each session.

Recommendations

What changes could GenCyber make to help you better design and implement a successful program?

-Additional funding support for paid staff to assist various aspect of the camps.

Appendices

Include any additional documentation (i.e. Program Schedule, etc.).

- A. Additional information about our camps, including photos, can be found on the Center for Information Assurance website: <http://www.memphis.edu/cfia/projects/gencyber.php>

You can also use the following links for individual information:

Middle School GenCyber Boot Camp is successfully completed.

- [GenCyber on WMC Action News 5](#)
- [Agenda](#)
- [View a presentation from the July 25-29 middle school camp](#)
- [View a gallery for July 25-29 middle school camp](#)
- [View a middle school competition winners](#)

High School GenCyber Boot Camp is successfully completed.

- [Download the agenda for June 20-24](#)
- [View a presentation from the June 20-24 GenCyber Camp](#)
- [View gallery for June 20-24 GenCyber Camp](#)
- [View High School Competition Winners](#)

B. GenCyber Personnel

Dipankar Dasgupta, Program Director

Kriangsiri "Top" Malasri, Lead Instructor

Erica Boyce, Program Assistant

Karen Bell, Systems Analyst

Tammy Alexander, Project Manager

Kendra Tillis, Business Officer

Student Volunteers: Sharifa Begum, Daya Ram Budhatoki, Robert Edstrom, Aaron Marshall, Mona Mishra, Abhijit Nag, Vamsi Krishna Polam, John Shrein, Sujit Shrestha, McKittrick Swindle, Berkeley Willis, and Adithya Murthy

C. High School Camp Agenda

Monday, June 20

0830-0930	Breakfast/Registration	Erica Boyce/Top Malasri
0930-0945	Welcome by U of M Provost	Dr. Karen Weddle-West
0945-1100	Cyber Security First Principles (Lecture)	Top Malasri / Rhythm S.
1100-1115	Break	
1115-1200	Cyber Code of Conducts & University Network access Policy (Presentation)	Karen Bell/Sharifa Begum
1200-1300	Lunch	
1300-1400	Internet Security and Safe Browsing (Presentation)	Dr. Dipankar Dasgupta, Center Director
1400-1415	Break	
1415-1630	Why you need to use strong Password? (Presentation)	Abhijit Nag/John Shrein

Tuesday, June 21

0830-0930	Breakfast/Registration	Top Malasri/Erica Boyce
0930-1100	Cyber Security First Principles (Lecture)	Top Malasri/ Rhythm S.
1100-1115	Break	
1115-1200	Government Cyber Security Threats (Presentation)	Mr. Tim Marsh, FBI
1200-1300	Lunch	
1300-1400	NSA Day of Cyber Session	Top Malasri/ Rhythm S.
1400-1430	Concept of Encryption (Lecture)	Top Malasri/Robert
1430-1445	Break	
1445-15:30	Power of Programming (McWherter Library 225)	Top Malasri/Mac
15:30 – 16:15	U of M Data Center Visit	Karen Bell/Liliana Moisa

Wednesday, June 22

0830-0930	Breakfast/Registration/Ice Breaker	Top Malasri/Erica Boyce
0930-1100	Review of Cyber Security First Principles	Top Malasri/Rhythm S.
1100-1115	Break	
1115-1200	Encryption/Decryption Game (Feedback form) (McWherter Library 225)	Abhijit Nag/Robert/ Berkeley
1200-1300	Lunch (Tiger Catering)	
1300-1400	Security Lesson: Virtual Scavenger Hunt in Campus (Panhellenic Room 206)	Mona Mishra/ James/Rhythm
1400-1415	Break	
1415-1615	Introduction of App Inventor (McWherter Library 225)	Top Malasri/James

Thursday, June 23

0830-0930	Breakfast/Registration	Erica/James/ Rhythm
0930-1100	Web Form validation Exercises (McWherter Lib. 225)	Dasgupta/Sujit/Berkeley
1100-1115	Break	
1115-1200	Campers work on App Inventor project (cybersecurity first principles) (Panhellenic Room 206)	Top Malasri/James/Mona
1200-1300	Lunch at FIT (Catering)	
1300-1445	Multi-factor authentication Project Demonstration (Presentation) at FIT 326	John Shrein/ Abhijit Nag/ McKittrick Swindle
1445-1500	Break	
1500-1530	FedEx Institute of Technology (FIT) Tour	Tammy Alexander/ Erica
1530- 1615	University (McWherter) Library Visit	Tammy Alexander/ Erica

Friday, June 24

0830-0930	Breakfast/Registration	Erica/Rhythm/James
0930-1100	Campers complete their App Inventor projects, prepare presentations (McWherter Library 225)	Top Malasri/James/ Rhythm
1100-1115	GenCyber Bootcamp Feedback(Online Survey) at McWherter Library 225	Malasri/James/ Rhythm
1115-1130	Break	
1130-1200	Computer Science Undergraduate Program at U of M	Dr. Lan Wang, CS Chair
1200-1300	Lunch	
1300-1400	Cyber Ethics & Privacy issues in Social Networks (Presentation)	Dr. Judy Simon/Ruby Booth
1400-1415	Break	
1415-1600	App Project presentations (parents are welcome)	Top Malasri & Panelists
1600-1630	Award Ceremony and Closing	D. Dasgupta/Erica/Top

Further details of High School Camp Descriptions of Activities

Cyber Security First Principles (255 minutes) – Kriangsiri Malasri, lead instructor

We introduced the ten first principles and discussed examples of where they could be applied. Activities included working through exercises in the passport booklet, playing a Jeopardy game with the students, and using interactive quizzes created with the Kahoot website.

Team Project (255 minutes) – Kriangsiri Malasri, lead instructor

We introduced students to the web-based App Inventor software for creating their own Android apps using a drag-and-drop interface. Students were given time throughout the week to work in teams to produce a cyber security related app of their choice.

Lectures (555 minutes)

- Cyber Code of Conduct and University Network Access Policy (45 minutes) – Karen Bell, Systems Analyst II, U of M Enterprise Application Services
This session covers different policies of proper network use at the University of Memphis and how to access wireless network security. Students have opportunity to learn various network environments in the classroom and lab spaces. Responsibilities of appropriate online behaviors are discussed.
- Internet Security and Safe Browsing (60 minutes) – Dipankar Dasgupta, program director
This topic covers a wide variety of security threats and educates the user on day-to-day use of computer devices. Students learn how to safely browse online mainly focusing on understanding secure website indicators of spams and phishing emails.
- Why Do You Need a Strong Password? (135 minutes) – Abhijit Nag and John Shrein, graduate students
Passwords are essential for any computer access. Choice of weak passwords result in systems breakdowns. This session covers how to create security passwords and checking the password strength by using best practices.
- Government Cyber Security Threats (45 minutes) – Tim Marsh, Memphis FBI
Agent Marsh gave an overview of his career and of cyber threats facing the nation today.
- Encryption and Programming (75 minutes) – Kriangsiri Malasri, lead instructor
We introduced students to simple encryption and decryption using a Caesar cipher, and then showed how this could be implemented in Java.
- Multi-factor Authentication Project Demonstration (105 minutes) – John Shrein and Abhijit Nag, graduate students; McKittrick Swindle, undergraduate student
U of M students demonstrated some of their current research work on a multi-factor authentication system.
- Computer Science Undergraduate Program at U of M (30 minutes) – Lan Wang, Chair, Department of Computer Science
Our department chair gave an overview of why computer science is a promising field of study, and presented some of the opportunities available to CS students at the U of M.
- Cyber Ethics and Privacy Issues in Social Networks (60 minutes) – Judy Simon, Professor, Department of Business Information and Technology
This presentation was very successful in helping students realize the potential danger of sharing personal information on social media. Several examples of cyber bullying and innocent online communication that resulted in people meeting strangers and being abducted as a result were discussed.

Games and Interactive Activities (255 minutes)

- Day of Cyber session (60 minutes) – Rhythm Syed, graduate student
We walked through the Day of Cyber website with students, which includes information on various cyber security careers.
- Encryption/Decryption Game (45 minutes) – Abhijit Nag, graduate student; Robert Edstrom and Berkeley Willis, undergraduate students

Students played an encryption/decryption video game created by U of M students using the Unreal game engine.

- The Puzzle-Based Learning exercise introduced high-school students to the basic ideas of encryption/ decryption. A student would start the game and attempt to encrypt or decrypt a secret message using their character, and if they successfully decoded the message they were introduced to brute force methods to crack PIN numbers.
- Virtual Scavenger Hunt (60 minutes) – Mona Mishra and Rhythm Syed, graduate students; James Kiddy, undergraduate student
In this web-based game, students traveled around a campus map by answering cyber security questions.

Web Form Validation Exercises (90 minutes) – Dipankar Dasgupta, program director; Sujit Shrestha, graduate student; Berkeley Willis, undergraduate student

The web form validation exercise is an introduction on the possible weaknesses in web forms, and showing the importance of server side checks/validations of forms submitted. Web forms mainly have client side checks which keep a normal user with in bound of submitting valid information within the format expected. In this exercise students try to find weaknesses in the web form's implementation, by either trying to give bad/malicious data or even by looking at the code that is used for the client side checks.

Facility Tours (120 minutes)

- U of M data center tour (45 minutes)
- FedEx Institute of Technology tour (30 minutes)
- McWherter Library tour (45 minutes)

D. Middle School Camp Agenda

Monday, July 25

AM 8:30-9:30	Breakfast/Registration	Erica Boyce/Volunteers
9:30-9:45	Welcome by the A & S Dean, U of M - FIT	Dr. Thomas J. Nenon
9:45-11:00	Cyber Security First Principles (& Pre-evaluation)-FIT	Top Malasri / Rhythm S.
11:00-11:15	Break	
11:15-12:00	Cyber Code of Conducts & University Network access Policy -FIT	Karen Bell
PM 12:00-1:00	Lunch	
1:00-2:00	Online Privacy, Security and Safe Browsing -FIT	Dr. Dipankar Dasgupta, Center Director
2:00-2:15	Break	
2:15-4:30	Why you need to use strong Password? -FIT	Abhijit Nag/John Shrein

Tuesday, July 26

AM 8:30-9:30	Breakfast/Registration/Ice Breaker	Erica Boyce/ Rhythm S.
9:30-11:00	Cyber Security First Principles (Lab)- Use Kahoot site	Top Malasri/ Rhythm S.

11:00-11:15	Break	
11:15-12:00	Government Cyber Security Threats - FIT	Mr. Tim Marsh, FBI
PM 12:00-1:00	Lunch	
1:00-2:30	NSA Day of Cyber: Session 1 (Lab)	Top Malasri/ Rhythm S.
2:30-2:45	Break	
2:45-3:30	Introduction to Group Project (based on Cyber Security First Principles) -FIT	Top Malasri/Mac
3:30 – 4:15	U of M Data Center Visit	Karen Bell

Wednesday, July 27

(Evaluator visit: Ashley Greeley & Doug Klumpe)

AM 8:30-9:30	Breakfast/Ice Breaker	Erica Boyce/ Rhythm S.
9:30-11:00	Review of Cyber Security First Principles (Jeopardy Game) -FIT	Top Malasri/Rhythm S.
11:00-11:15	Break	
11:15-12:00	Security Lesson: Virtual Scavenger Hunt in Campus (Lab)	Dasgupta/Sujit
PM 12:00-1:00	Lunch	
1:00-2:00	NSA Day of Cyber: Session 2 (Lab)	Top Malasri/ Rhythm S.
2:00-2:15	Break	
2:15-3:30	Online Security Game demo (Lab)	Robert/Berkley
3:30 – 4:15	Campus Tour: FedEx Institute of Technology (FIT) & McWhether Library	Erica /Mary Ann/ Barbara R Thomas

Thursday, July 28

AM 8:30-9:30	Breakfast/Ice Breaker	Erica Boyce / Rhythm
9:30-11:00	<i>Guest Speaker: Cybersecurity Education for K-12 (FIT)</i>	Dr. Wiam Younes
11:00-11:15	Break	
11:15-12:00	Review of Cyber Security First Principles (Lab)	Top Malasri/ Rhythm
PM 12:00-1:00	Lunch	
1:00-2:00	Continue Team Project work (Lab)	Top Malasri
2:00-2:15	Break	
2:15-3:00	Industry Guest Speaker (Lab)	Meka Egwuekwe
3:00 - 4:15	Continue Team Project work (Lab)	Top Malasri

Friday, July 29

AM 8:30-9:30	Breakfast/Ice Breaker	Erica Boyce /Rhythm
9:30-11:00	Campers complete their projects, prepare presentations (Lab)	Top Malasri
11:00-11:15	GenCyber Bootcamp Feedback (Online Survey) at Lab	Malasri/ Rhythm

11:15-11:30	Break	
11:30-12:00	Importance Computer Science & Cyber Education -FIT	James Simien (Guest Speaker), IRS
PM 12:00-1:00	Lunch	
1:00-2:00	Cyber Ethics & Privacy issues in Social Networks (FIT)	Dr. Judy Simon
2:00-2:15	Break	
2:15-4:00	Team Project presentations (parents are welcome)-FIT	Top Malasri & Panelists
4:00-4:30	Award Ceremony and Closing -FIT	D. Dasgupta/Erica/Top

Middle School Camp Descriptions of Activities

Cyber Security First Principles (300 minutes) – Kriangsiri Malasri, lead instructor

We introduced the ten first principles and discussed examples of where they could be applied. Activities included working through exercises in the passport booklet, playing a Jeopardy game with the students, and using interactive quizzes created with the Kahoot website.

Team Project (270 minutes) – Kriangsiri Malasri, lead instructor

We introduced students to the web-based Scratch software for creating animations and games using a drag-and-drop interface. This is similar in spirit to the App Inventor software that we used for the high school camp, but somewhat less technical. Students were given time throughout the week to work in teams to produce a cyber security related project of their choice. Based on feedback from the high school camp, we provided more structure by distributing printed handouts with project expectations and example topics.

Lectures (510 minutes)

- **Cyber Code of Conduct and University Network Access Policy** (45 minutes) – Karen Bell, Systems Analyst II, U of M Enterprise Application Services
This session covers different policies of proper network use at the University of Memphis and how to access wireless network security. Students have opportunity to learn various network environments in the classroom and lab spaces. Responsibilities of appropriate online behaviors are discussed.
- **Online Privacy, Security, and Safe Browsing** (60 minutes) – Dipankar Dasgupta, program director
This topic covers a wide variety of security threats and educates the user on day-to-day use of computer devices. Students learn how to safely browse online mainly focusing on understanding secure website indicators of spams and phishing emails.
- **Why Do You Need a Strong Password?** (135 minutes) – Abhijit Nag and John Shrein, graduate students
Passwords are essential for any computer access. Choice of weak passwords result in systems breakdowns. This session covers how to create security passwords and checking the password strength by using best practices.

Government Cyber Security Threats (45 minutes) – Tim Marsh, Memphis FBI

Agent Marsh gave an overview of his career and of cyber threats facing the nation today. He presented

real-life examples of how attackers have successfully compromised security/data and the importance of basic cyber security ideas. A major focus of his presentation included appropriate information to post on social media and the importance of strong passwords.

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- Cyber Security Education for K-12 (90 minutes) – Wiam Younes, Carnegie Mellon University
This presentation used real-world scenarios of students innocently providing personal information online and that was used to pinpoint their location. One example given, was a girl who entered a chat room and provided her school name and favorite park. From that information, the person was able to find her address and come to her house. Fortunately, this was a FBI agent that was doing an investigation on that particular chat room.
- Career Perspectives from Industry (45 minutes) – Meka Egwuekwe, Executive Director and Co-Founder, CodeCrew / Former Director of Software Development, Lokion
Meka is a well-known name in the Memphis tech community for his work with CodeCrew, a nonprofit that seeks to increase computer science exposure for underrepresented kids in the region. He discussed his personal career and encouraged students to pursue further studies in computer science.
- Importance of Computer Science and Cyber Education (30 minutes) – James Simien, IRS
A detailed and engaged discussion of job market and career opportunities in different federal agencies and industry
- Cyber Ethics and Privacy Issues in Social Networks (60 minutes) – Judy Simon, Professor, Department of Business Information and Technology
This presentation talked about the legal aspects of cyber ethics and the consequences to sharing gossip or cyberbullying. There are some cases of young people committing suicide as a result of unethical online communication.

Games and Interactive Activities (270 minutes)

- Day of Cyber session (90 minutes) – Rhythm Syed, graduate student
We walked through the Day of Cyber website with students, which includes information on various cyber security careers.
- GenCyber Card Game (60 minutes) – Rhythm Syed, graduate student
We distributed GenCyber card decks to students and taught them the rules of the game.
- Virtual Scavenger Hunt (45 minutes) – Dipankar Dasgupta, program director; Sujit Shrestha, graduate student
*In this web-based game, students traveled around a campus map by answering cyber security questions. Students were given a series of questions to answer in a specified amount of time. The first student to correctly answer the series of questions is the winner. A picture of the virtual scavenger hunt and instructions are below.

Facility Tours (120 minutes)

- U of M data center tour (45 minutes)
- FedEx Institute of Technology tour (30 minutes)
- McWherter Library tour (45 minutes)