Career Exploration of IoT with Automation, Cybersecurity and Robotics

Forsyth Tech Community College

Thomas Brown

Mini-Grant for Innovation Project

Awarded: 2024-2025

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Purpose & Background

This 3-day camp was developed by Forsyth Tech with support from NITIC to expand access to hands-on learning in cybersecurity, IoT, and engineering. The goal is to provide students with engaging experiences that build confidence, spark curiosity, and introduce pathways into technology careers.

Materials Required

- Laptop (per student)
- Internet connection
- SparkFun Inventor's Kit
- Administrator rights to install software (All needed software is inside the Inventors Kit)
- Student handouts (Cybersecurity Resources Link)

Camp Overview

This guide provides instructors with day-by-day schedules, instructions, cybersecurity lessons, safety notes, and classroom management strategies to run the camp effectively.

Day 1 Schedule

- 10:00–10:30 Intro & Icebreaker
- 10:30–12:00 SparkFun Activity (Projects 1–3)
- 12:00–1:00 Lunch
- 1:00–2:00 SparkFun Activity (student choice)

- 2:00–3:00 Cyber Activity

Day 2 Schedule

- 10:00–10:30 Cyber Activity
- 10:30–12:00 Open Build
- 12:00–1:00 Lunch
- 1:00–2:00 SparkFun Activity
- 2:00–3:00 Open Build / Support

Day 3 Schedule

- 10:00–11:00 SparkFun Activity
- 11:00–12:00 Student Build Time
- 12:00–1:00 Lunch
- 1:00–2:00 Cyber Activity
- 2:00–3:00 Celebration & Presentations

Ice Breaker Instructions

Each student will answer the following questions.

- Name
- Grade and School
- Favorite technology or app
- One thing you're excited to learn at camp

The SparkFun Inventor's Kit comes with a booklet that we follow as a class for the first 3 projects. From there, students are free to work on their own and customize their machines.

Link to the booklet: https://www.sparkfun.com/sparkfun-inventor-s-kit-guidebook-v4-1a.html

Link to purchase the Kit: https://www.sparkfun.com/sparkfun-inventor-s-kit-v4-1-2.html

For the Cyber activities, you can customize your camp as you see fit.

Cybersecurity Resources:

- https://trycyber.us/
- https://drive.google.com/drive/folders/1kXcsAvP8ENySUTyxhiVaTaGWCzZk2-n0?usp=sharing

Pre Workshop Questions for students: Spark Fun Training Pre-Workshop Questions – Fill out form

Post Workshop Questions for students: Spark Fun Training Post-Workshop Questions – Fill out form

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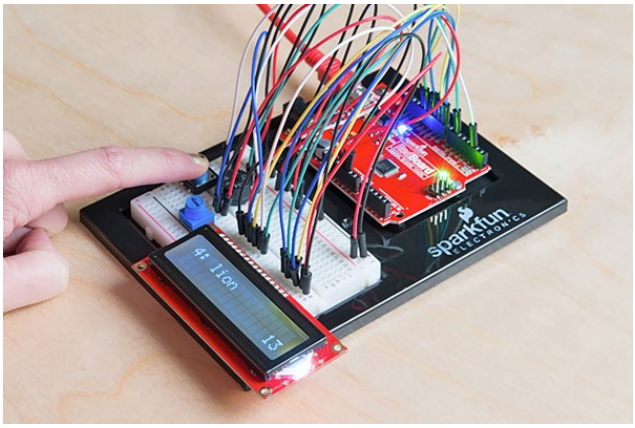
Crosby Scholars HMLS Cyber and Engineering Summer Camp

July 8th, 9th, 10th 2025 / Goodwill Industries – University Parkway, Winston-Salem, NC

Agenda



Day 1

- 10:00-10:30 – Intro and Icebreaker
- 10:30-12:00 – Spark Fun Activity
- 12:00 – 1:00 Lunch
- 1:00 – 2:00 Spark Fun Activity
- 2:00 – 3:00 – Cyber Activity
- 3:00 - Dismissal

Day 2

- 10:00 - 10:30 – Cyber Activity
- 10:30 – 12:00 – Open
- 12:00 – 1:00 – Lunch
- 1:00 – 2:00 – Spark Fun Activity
- 2:00 – 3:00 – Open
- 3:00 - Dismissal

Day 3

- 10:00 – 11:00 – Spark Fun Activity
- 11:00 – 12:00 – Open
- 12:00 – 1:00 Lunch
- 1:00 – 2:00 – Cyber Activity
- 2:00 – 3:00 – Celebrations
- 3:00 - Dismissal

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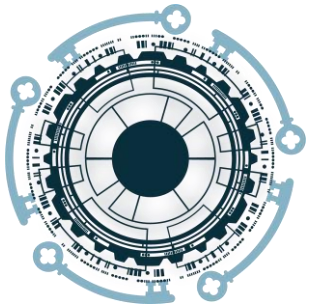
Post Workshop Questions: Spark Fun Training Post-Workshop Questions – Fill out form

Name: _____
Date: _____
Period/Block: _____



How Organizations Use Collected Data

I can understand what and how my personal data is being used by social media platforms. With this information, I am able to form and express my own opinion on whether or not I am comfortable with using social media.

Directions: Choose one social media platform (Facebook, Snapchat, Twitter, Instagram, TikTok, etc.). Research how they use your collected data.

1. What social media platform did you choose and why?

2. What does the social media platform you chose do with the information you provide them about yourself?

3. After conducting your research on your social media platform of choice, did your perspective change after realizing what they do with your collected data? Why or why not?

Name: _____
Date: _____
Period/Block: _____

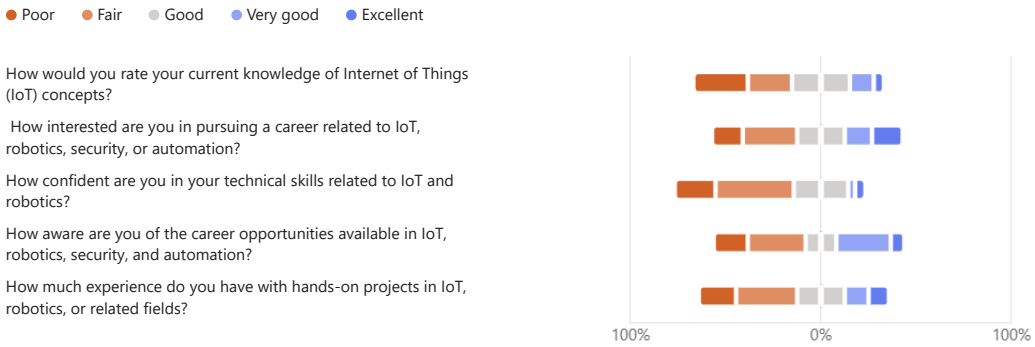
Reaper vs. Creeper

I can differentiate between a computer virus and a worm based on their characteristics, how they spread, and the type(s) of damage they can cause to networks and systems.

Directions: Answer the following questions by researching the effects of the Creeper and determining what the Creeper was, who created it, how it compares to the Reaper, and Ray Tomlinson's involvement.

1. **Who created the Creeper?**
2. **Was the Creeper a virus or worm? Explain.**
3. **Why might Tomlinson's enhancement of the Creeper be considered a problem?**
4. **What was the Reaper and why was it created?**
5. **Were Tomlinsin's advancements considered ethical or unethical? Explain.**

4. Please answer each question.



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