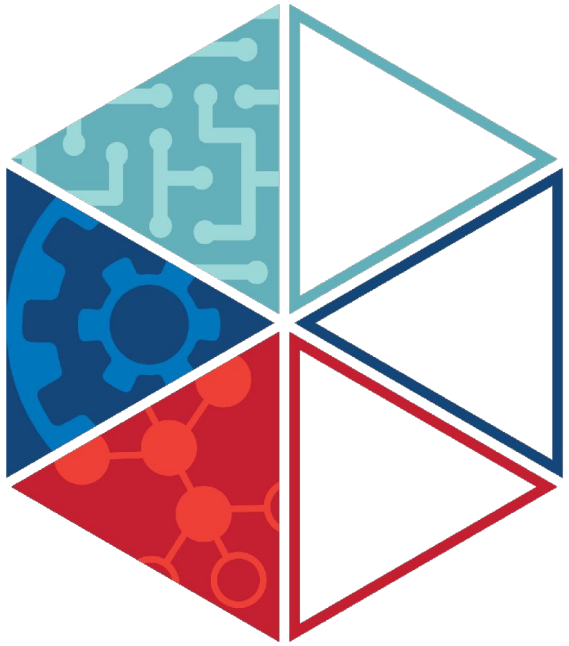

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Bringing Cybersecurity to a Nervous & Reluctant School/District

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Introduction

- Rangeview High School
- CyberPatriot
- Alpha Testing
- Master Teacher Training
- Commitment to Computer Science & Cybersecurity
- Elevator Speech

School - District “Yeah Buts”

This sounds good YEAH BUT:

- We will be teaching hackers-
- We don’t want to use machines to run viruses and hacking tools-
- Problem kids will be drawn to this class-
- We don’t want to open our system for this class-
- We will require permissions and incur liability-
- We don’t want to show students hacks or malicious software-

Essential Questions - APB Structure

The following slides are a representation of the Essential Questions for some of the unit lessons & the APB progression.

APB Model

	Stands for...	Provides...	Example of…
A	**Activities**	Hands on work. An opportunity for directed work and skill/knowledge Hands on work. An opportunity for directed work and skill/knowledge acquisition	Following a set of directions to establish the standards for Firewalls and implement them.
P	**Projects**	More work with others and an opportunity to create solutions.	In cybersecurity - create a internet policy for a company using industry standards.
B	**Problem**	An ill formed problem that allows and encourages student creativity on real world situations	An infected server is found as a part of a company intranet. Students will create a plan of attack and implement solutions to repair the system and get it back online. An incident report is generated for the company.

Units of Study

- Unit 1 Personal Cybersecurity
- Unit 2 System Cybersecurity
- Unit 3 Enterprise Cybersecurity
- Unit 4 Applied Cybersecurity: Digital Forensics

Unit 1- Lesson 1.2 Security & The Internet

Essential Questions

- Ethics: Why do people engage in risky behavior in cyberspace?
- Information and Protection: How do computers safely store information?
- Networking: How can information be safely exchanged?
- Methodologies of Malware: How can malware be stopped?

Unit 1- Lesson 1.3 Protect Your Data

Essential Questions

- Ethics: What are the consequences of inappropriate behavior in cyberspace?
- Information and Protection: Why does information need protection? Why does information need protection? How do computers safely store information?
- Networking: How can information be safely exchanged?
- Methodologies of Malware: How can malware be stopped?
- Collaboration, Communication, and Professionalism: What makes a good cyber team?

Unit 2 - Lesson 2.2 Server Vulnerabilities

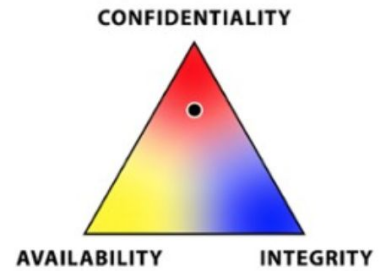
Activities, Project, & Problems

- Activity 2.2.1 More on Malware
- Activity 2.2.2 Server Vulnerabilities
- Activity 2.2.3 Server Analysis
- Project 2.2.4 Secure the Server

Essential Questions

- Information and Protection: How do computers safely store information?
- Data Science: How does past knowledge help with data analysis?
- Networking: What makes a network vulnerable? How can we minimize network vulnerabilities?

Activity - CIA Triad - eCommerce Site

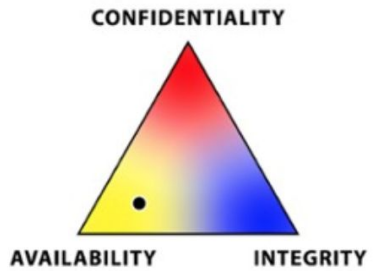


Red

high confidentiality, low integrity, and low availability

Blue

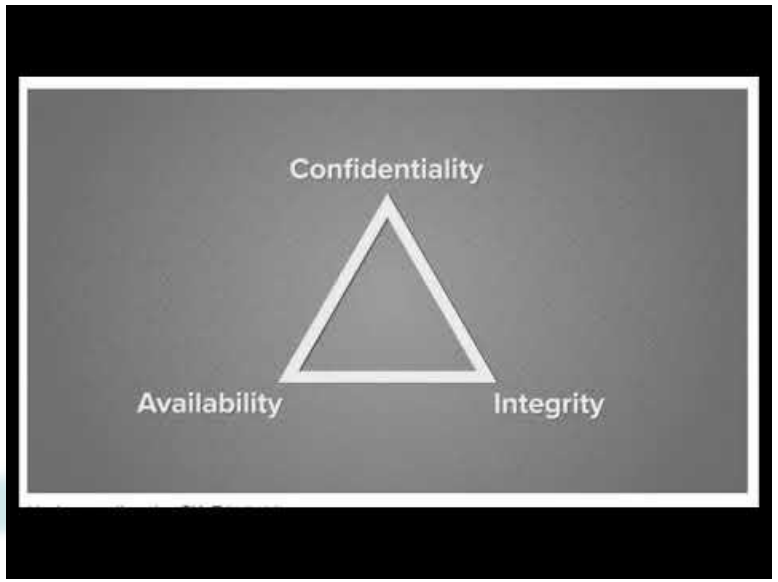
high integrity, low confidentiality, and low availability



Yellow

high availability, low confidentiality, low integrity

[CIA Triad Video]



Activity - CIA Triad - eCommerce Site

Things to Consider

- Confidentiality
  - Who should have access to *view* each data category: internal users (Employee), external users (Customer), or both?
  - Does the data require encryption? Why or why not?
- Integrity
  - Who should have access to *modify* the data: internal users (Employee), external users (Customer), or both?
- Availability
  - What level of *availability* does this data require? Explain your thoughts.

Category	Confidentiality	Confidentiality - Encrypt (Yes or No)	Integrity	Availability
Product Catalog	**Views? Employee Customer**		**Modifies? Employee Customer**	
Customer & Order Information	**Views? Employee Customer**		**Modifies? Employee Customer**	
Website Information	**Views? Employee Customer**		**Modifies? Employee Customer**	
Employee Information	**Views? Employee Customer**		**Modifies? Employee Customer**	

Unit 3.3 Analyzing the Net

Project & Problems

- Activity 3.3.1 Analyzing Address Resolution
- Activity 3.3.2 Analyzing Control Messages
- Activity 3.3.3 Analyzing Packet Fragmentation
- Activity 3.3.4 Analyzing Wireless Authentication
- Project 3.3.5 Analyzing the Attack

Project: In this activity and throughout the lesson, you enhance your packet analysis skills to explore network protocols. In-depth packet analysis is an important skill for security professionals who use it as a way to identify suspicious activity and attacks on networks and hosts.
First, you learn how packets and network communication *should* behave, with healthy data on reliable networks. Then, you'll see what network traffic looks like during an exploit. Keep in mind that analyzing packet data like this requires knowledge of how a host or network behaves under normal circumstances.

Unit 4

Problem

- In Lesson 4.1, you learn the history of encryption and ciphers and use frequency predictors to try to break the codes. You practice data hiding techniques, such as cryptography and steganography. Finally, you attempt to decrypt each other's encrypted messages.
- Lesson 4.2 introduces the process of gathering digital evidence, analyzing it, tracing a criminal through their digital footprint, and preparing to prosecute the criminal.
- In the final lesson, you use your knowledge from the entire course to investigate a crime and provide digital evidence to solve it.

Elevator Speech

- Work with a person near you.
- Start to create a speech that is 30 to 45 seconds long to convince people of the value of Cybersecurity being taught in your school and/or district.
- Pick facts, needs in your community, & value to your programs.
- Think about fears and address them as well.
- Connect to school / district / state goals
- Practice on each other and a few will share.

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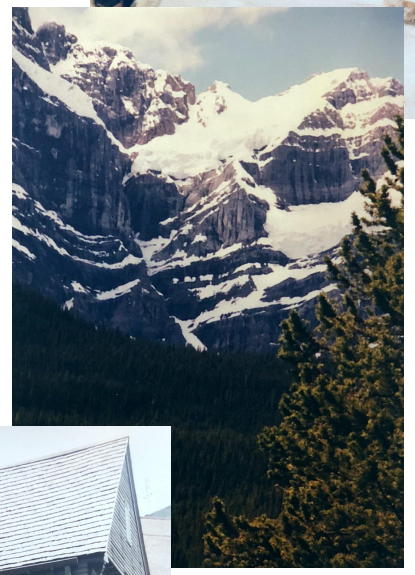

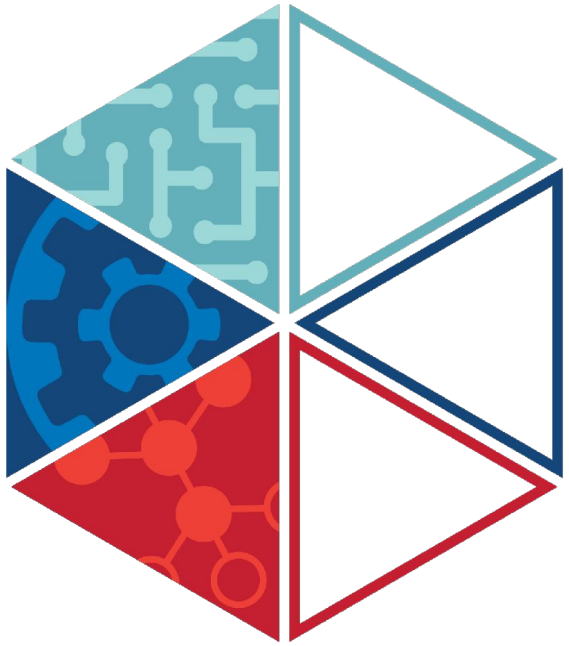

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