RING

Overview

- Origin and Goals
- Timeline

RING REGIONS INVESTING IN THE NEXT GENERATION

Origin and Goals

K-12 Pipeline Grant

CAE-C

Regions
Investing in the
Next
Generation

High School Credit

Academic & Business Partners

College Credit

Engaging, accessible, age-appropriate, online curriculum.

Career Pathways

Honor Society

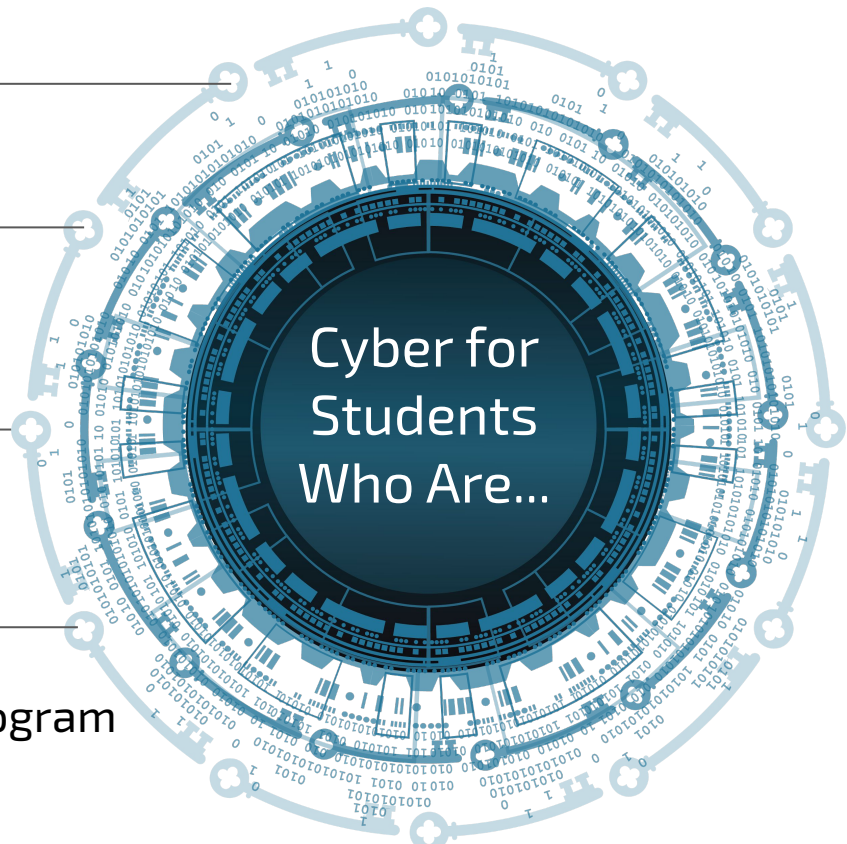Virtual Challenges & Labs
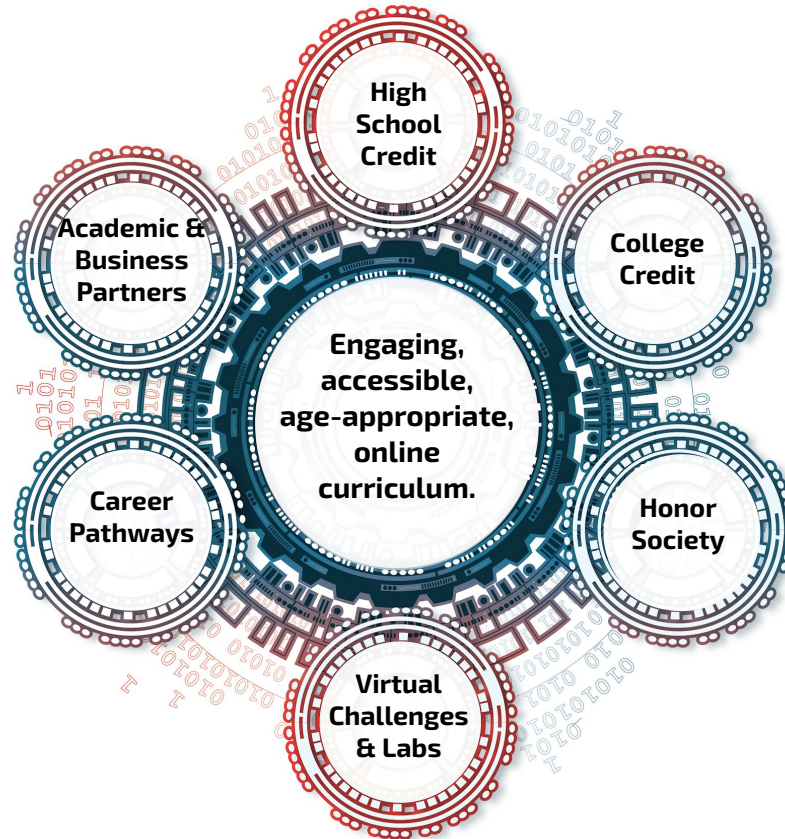
Purpose

Rural

Under-resourced

Homeschooled

Attending schools without a cyber program

Cyber for Students Who Are...

Targeting high school students in the U.S.

Grant Partners for RING 1

The University of Alabama in Huntsville in Alabama

- **Coastline Community College** in California
- **Dakota State University** in South Dakota
- **Pace University** in New York
- **Purdue University Northwest** in Indiana
- **Dark Enterprises** in Indiana
- **Connections Academy, Niswonger Fndn., and National Rural Ed. Assoc.**

Moraine Valley Community College in Illinois

- **Forsyth Technical Community College** in North Carolina
- **Brookdale Community College** in New Jersey
- **Florida State College at Jacksonville** in Florida
- **Cal Poly Pomona** in California
- **Eastern New Mexico University Ruidoso** in New Mexico
- **Cisco Networking Academy**
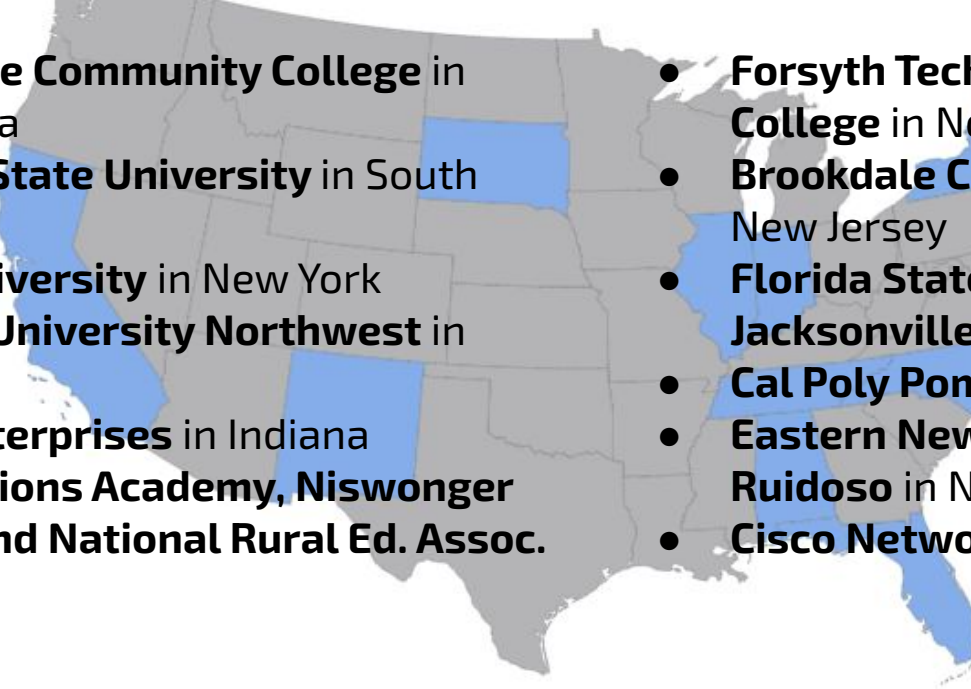
The RING

Inspired by the Iron Ring of engineers

- Pride with humility
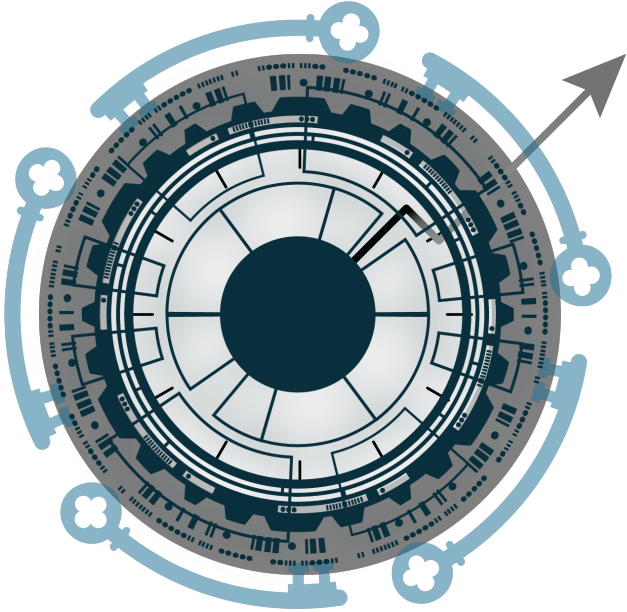- Ethical obligation
- Professional conduct

Goal of RING is to provide cybersecurity for all students with an emphasis on **ethics**, **personal responsibility**, and **professionalism**.

Progress and Timeline

Timeline Highlights

Fall 2021

Curriculum Development

Launch the Pilot Course

Spring 2022

Use feedback to enhance the curriculum

Summer 2022

Launch RING for other institutions

Fall 2022

Expand the course to more students

Online Curriculum for Credit

- Pilot course taught by a trained and credentialed K–12 educator
- Available for use by any educator
- Students will receive high school credit
- Students have the option to receive college credit at participating institutions
- Students may be eligible for technology assistance

Pilot Course

WHAT YOU NEED TO KNOW ABOUT
Alabama Connections Academy

When you enroll your child in Alabama Connections Academy, we'll expand the ways they can learn. Discover what it's like to be part of an online public school that helps students go further in life.

Code Of Ethics

Curriculum Package

Lesson Plans & Instructor Slides

Lesson & Unit Planner | Sharing & Class Website | Standards...

Week | Month | Unit Timeline | Outline | Filter

Unit Timeline

OCTOBER 20

Ubiquitous Connectivity

Tuesday
Sep 22, 2020

Ubiquitous Connectivity

RING
Day 3: 3.1

Standards and Objectives
3.1 EU The Internet is a large, globally distributed network that is divided into l...
3.1.1 LO Students will explain how devices use layers to communicate across t...
3.1.1a EK Networks carry two types of information, those that allow for the co...

CAE KUs

Lesson Delivery and Setup
Instructor will need a computer, access to the Internet, and a projector (or appropriate screen sharing software if virtual) Student activities can be completed on paper or digitally. Students will need access to the Internet for some activities.

Procedures
Warm Up Activity
Have students work with a partner to describe a grocery store. They might list things like the customers, the employees, the cash

Labs & Games

YOU GOT AN ITEM!

Visually-Rich Content

Physical Layer	Logical Layer	Social Layer
Geographic Components	Logical Network Components	Persona Components
Physical Network Components		Cyber Persona Components

Graphic Organizers

Physical Layer
- Geographic Components
- Physical Network Components

Logical Layer
- Logical Network Components

Social Layer
- Persona Components
- Cyber Persona Components

Assessments
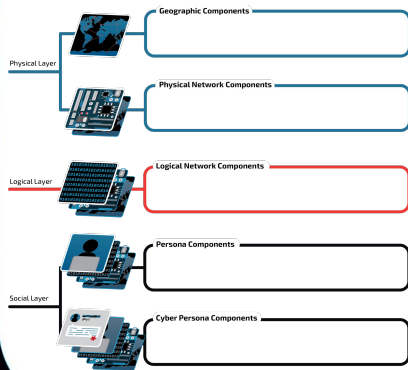
Name: _____ Date: _____ Period/Block: _____

Classify the CIA Triad (Print)

Objective: I can categorize the CIA Triad.

Part 1: Drag-and-drop each part of the CIA Triad to match the scenario.

Confidentiality | Integrity | Availability

Which part of the Triad does this scenario VIOLATE?
Fraudulent dollar bills.

Which part of the Triad does this scenario VIOLATE?
Glasses with a built-in microphone.

Which part of the Triad does this scenario VIOLATE?
A cell phone signal jammer.

NGE-0 K12 RING Pre

Name: _____ Class: _____ Date: _____ ID: A

Unit 11 Authentication and Identity Management

Multiple Choice
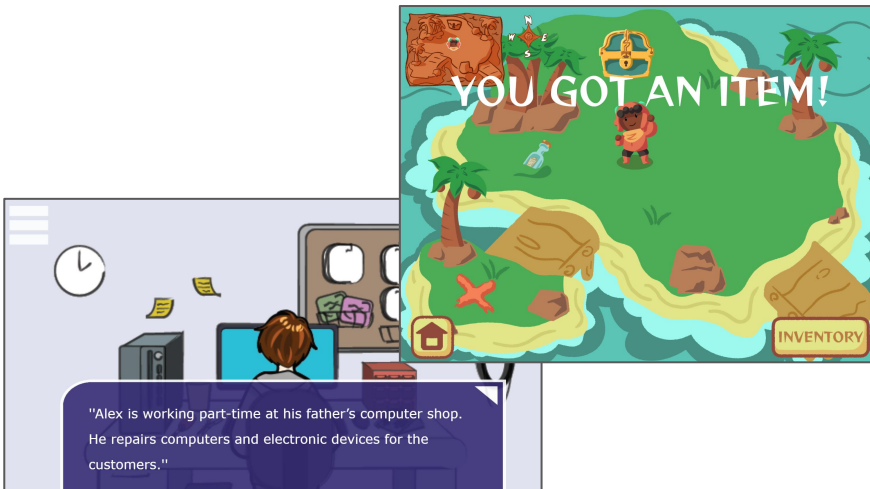*Identify the choice that best completes the statement or answers the question.*

____ 1. This ties behavior to a specific user.
  a. password
  c. least privilege
  b. username
  d. multi-factor

____ 2. Which of the following is NOT a way to authenticate a user?
  a. Something the user knows
  c. Something the user is
  b. Someone the user knows
  d. Something the user has

____ 3. Which of the following is something the user does?
  a. smartcard
  c. signature recognition
  b. fingerprint
  d. retinal scan

____ 4. Which of the following is NOT a good password strategy?
  a. Making a good password and using it over and over
  c. Having a password that is complex
  b. Having a password that is easy to remember but difficult to guess
  d. Having a unique password for each account

____ 5. Which of the following is NOT a factor in password strength?
  a. length
  c. complexity
  b. type of account
  d. unpredictability

____ 6. Simeon finds a briefcase that has a lock that is three numbers long (____ ____ ____) what is the maximum number of tries it would take her to find the correct combination of the lock?
  a. 10
  c. 1,000
  b. 100
  d. 10,000

____ 7. Which password would take the longest to crack?
  a. 123456
  c. apple1
  b. T@ke1T
  d. qwerty

____ 8. Which of the following is an example of good password security?
  a. changing passwords often
  c. sharing your password with only your best friend
  b. hiding the password underneath the keyboard
  d. keeping your password the same as the default password

Layer		Description	Protocols
Data	**Application**	End user layer: program opens	HTTP, FTP, DNS, Telnet
Data	**Presentation**	Syntax Layer: Encrypt / Decrypt	SSH, IMAP, JPEG, MPEG
Data	**Session**	Sync & Send: Interhost communication	SQL, PAP, API's, Sockets
Segments	**Transport**	TCP & Flow Control: Communication & Reliability	TCP, UDP
Packets	**Network**	Packets: Path Determination & IP Addressing	IPv4, IPv6, IPSec, ICMP, IGMP
Frames	**Data Link**	Frames: MAC & LLC (Physical) Addressing	Ethernet, ARP, STP, PPP
Bits	**Physical**	Physical Structure: Media, Signal, & Digital Transmission	Coax, Fiber, Wireless

Software (Application, Presentation, Session)

Hardware (Network, Data Link, Physical)

Request / Response

MAC Address: 58-56-68-69-35-56

IP

Labs and Games

Labs provide hands-on learning through an online portal.

Games map to Big Ideas that drive the primary learning objectives.

YOU GOT AN ITEM!

INVENTORY

"Alex is working part-time at his father's computer shop. He repairs computers and electronic devices for the customers."

Name: _____
Date: _____
Period/Block: _____

Asymmetric Practice

Objectives:
Explain the relationship between public and private keys in asymmetric cryptography.
Apply an asymmetric cryptographic tool to accomplish confidentiality and integrity in a practical scenario.

Overview
RSA is a popular algorithm used for asymmetric cryptography. It can be used to generate public-private key pairs and both encrypt and decrypt information. You will explore RSA using a simple online tool to encrypt a message to your partner. In a future assignment, we will install and use a more realistic version of RSA.

Setup
1. This is a paired activity. Grab a partner and work together!
2. Both you and your partner visit the website: https://www.javainuse.com/rsagenerator
   (Note: if the website is down, use the backup site: https://www.codeusingjava.com/tools/rsa)
3. You and your partner will need a way to copy and paste data back and forth (e.g., Zoom, Slack, email).

1. Key Generation
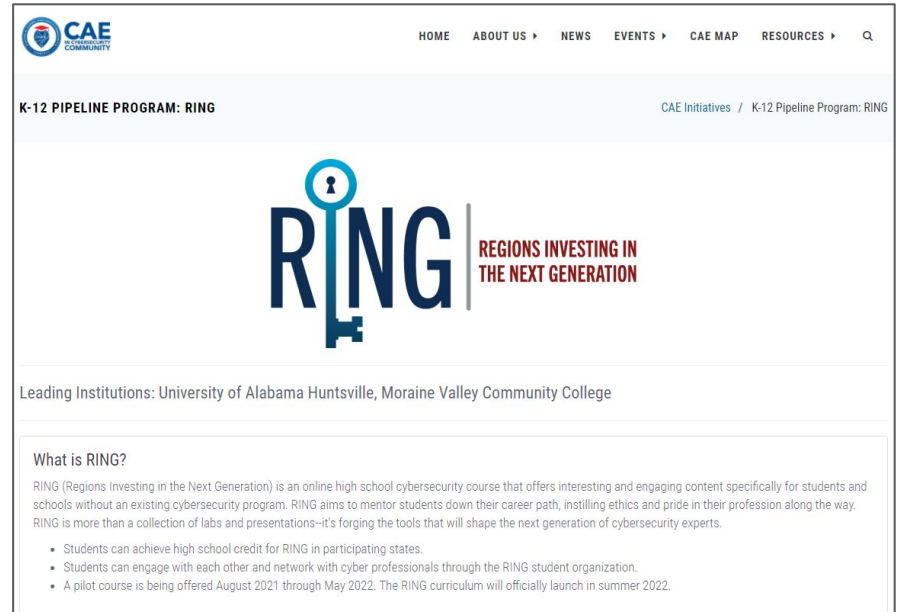You and your partner will each generate your RSA public and private keys: click **Generate Keys**.

RSA Generate Keys

This tool generates RSA public key as well as the private key of sizes - 512 bit, 1024 bit, 2048 bit, 3072 bit and 4096 bit with Base64 encoded. The generated private key is generated in PKCS#8 format and the generated public key is generated in X.509 format.

Website

URL: https://www.caecommunity.org/initiative/k12-ring

Student and Teacher Interest Forms

Student Organization

Students will receive entry to their own student organization.

- Connected to the online course
- Webinars
- Online discussion groups
- Mentorship
- Career pathway advice
- Other opportunities

Students can complete a learning/community service portfolio to also be considered for the honor society.

Curriculum Driven By

Cybersecurity Curriculum Guidelines

- Ethics
- Establishing Trust
- Ubiquitous Connectivity
- Data Security
- System Security
- Adversarial Thinking
- Risk
- Implications

"Guidelines created to encourage curriculum providers, teachers, and industry to create curriculum designed to inspire high school students to pursue a profession in cybersecurity, as well as develop thinkers with a cybersecurity mindset that will enhance any profession they pursue."[1]

Targeted Foundational CAE Knowledge Units

[1]https://cryptologicfoundation.org/what-we-do/educate/high-school-cybersecurity-curriculum-guidelines.html

Contact Info

RING
REGIONS INVESTING IN
THE NEXT GENERATION

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