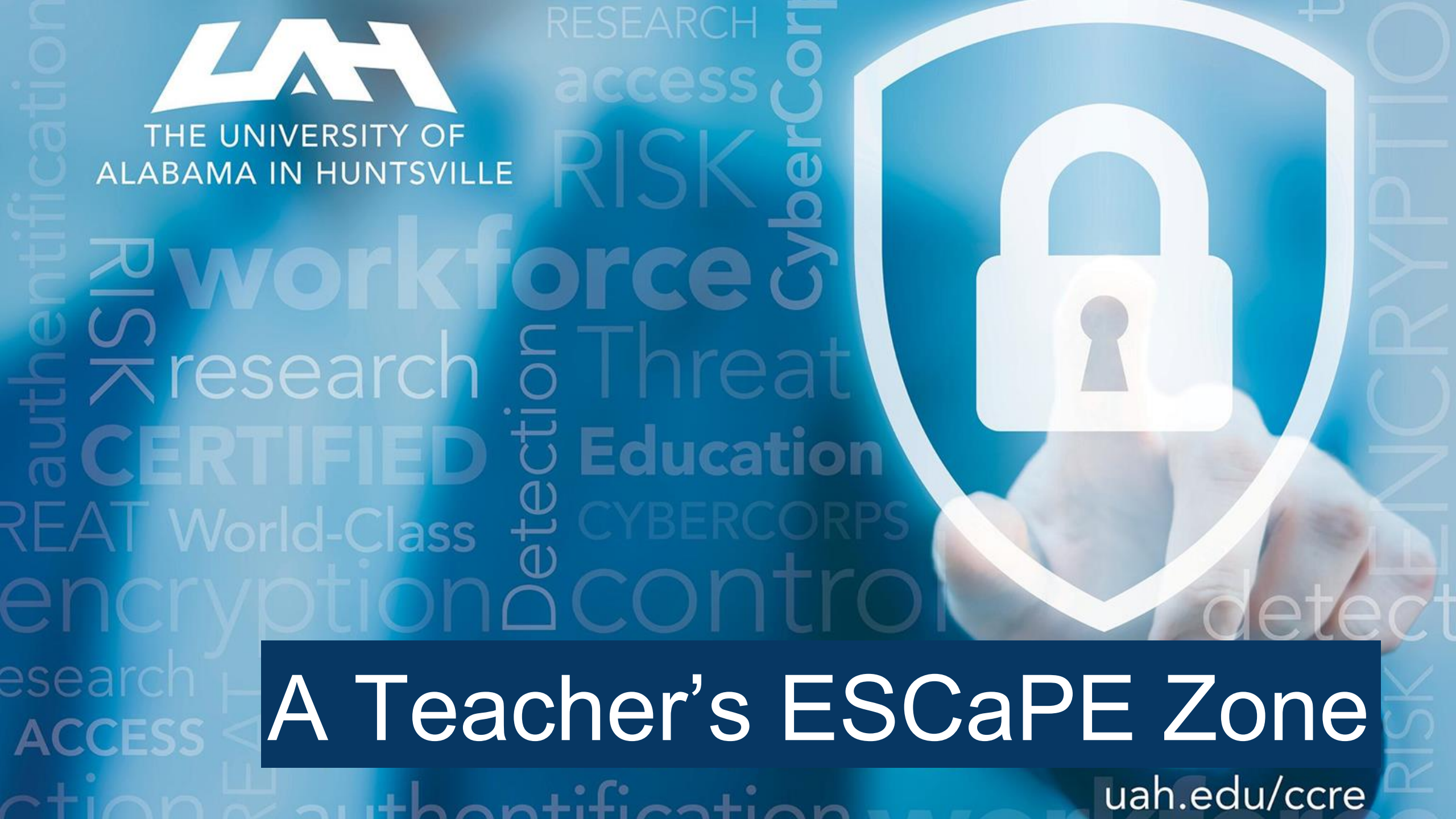

THE UNIVERSITY OF
ALABAMA IN HUNTSVILLE
A Teacher's ESCaPE Zone
uah.edu/ccre

Welcome!

ESCaPE Zones =

Engaging

Students in

Cybersecurity

and

Programming

Education

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

Introductions

GenCyber

NTID REGIONAL STEM CENTER
SOUTHEAST

AIDB
Alabama Institute for Deaf and Blind
Deaf. Blind. Limitless.

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE
CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

Objectives

- Experience an ESCaPE Zone module
- Understand how ESCaPE Zones can be used
- Learn how they are created
- Brainstorm your own ESCaPE Zone

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

Your Mission

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE
The Great Escape

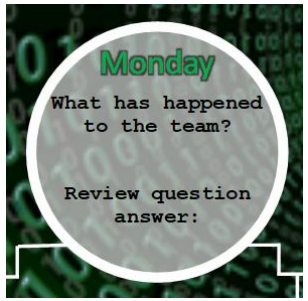
- Asteria Pointe, a noted hacker and inventor, made a discovery that will compromise the privacy of millions of social media users across the globe.
- She invented **Bifrost**, a specialized laser-based, decryption tool.
- An evil group hopes to buy Bifrost in order to tap into Snapchat's users' history and make all messages and videos public.
- While Asteria was getting ready to rendezvous with agents of evil, she realized that the authorities had learned of her plot and were closing in.
- She fled through the restroom window, leaving behind a briefcase, her carry-on, and her purse.
- Your mission is to analyze these items for clues in order to find the following vital information to apprehend Asteria and the group's members.

Serene Security

Serene Security needs your help. Our elite team of cybersecurity experts are missing, and we need them back. They have left clues, and your job is to answer key questions to aid in their return and to stop the evil that is out there somewhere.

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE
CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

What Did You Just Do?



Information Found

- They are hiding.
- Review question answer:

Skills Used

Problem solving, book cipher, Caesar cipher, and cryptography

Buyer's name:

- Louis
- 74

Binary, book cipher, and troubleshooting Python code

Meeting location:

- St. John's Island in Canada
- 53

Imaging a USB, digital forensics (data carving, steganalysis, and metadata extraction)

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

How Do We Use These?

01	Review Skills Taught in Camp
02	Encourage Problem Solving & Teamwork
03	Assess Student Learning
04	Create Excitement

Examples: Cryptography, Python, Wireshark, Digital Forensics, Binary

Students must solve the exercises together without written instructions.

Daily ESCaPE challenges give instructors a chance to reteach or adjust pacing. Final challenge provides an overview of camp.

Challenges are competitive and story based. They allow the students to be the heroes.

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

Why Do We Use These?

- Versatile: Modular -- Can be used in stations or can be used as a puzzle chain
- Provide Assessment: Formative or summative. Instructors can easily gauge learning.
- Provide Review and Reflection: Students are aware of their own learning, and certain skills are reinforced.

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

Types of Review & Assessment

Reviews: Implicit or Explicit

Implicit
Activities are not tied to review questions and only test skills.

Explicit
Students are asked to answer review questions as well as demonstrate skills.

Assessments: Formative or Summative

Formative
Daily challenges to measure students' understanding so skills can be retaught.

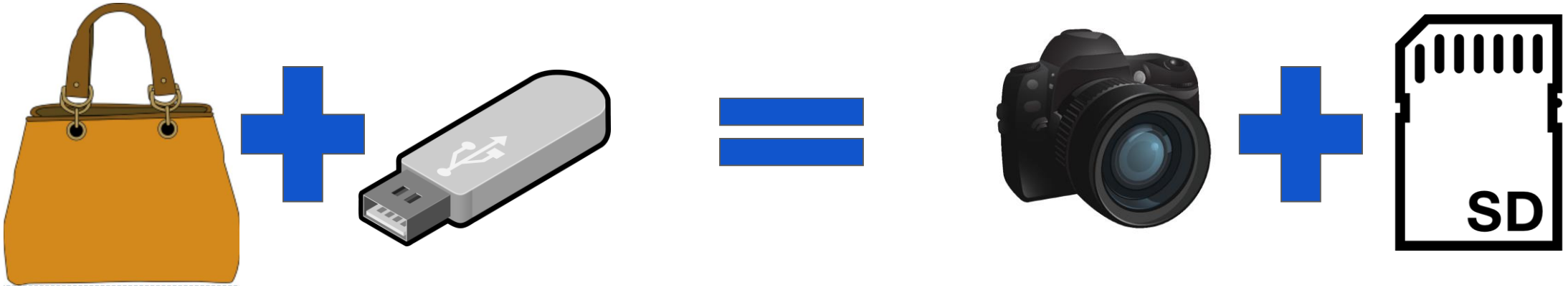
Summative
Cumulative activity to measure student understanding. Best team is rewarded.

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

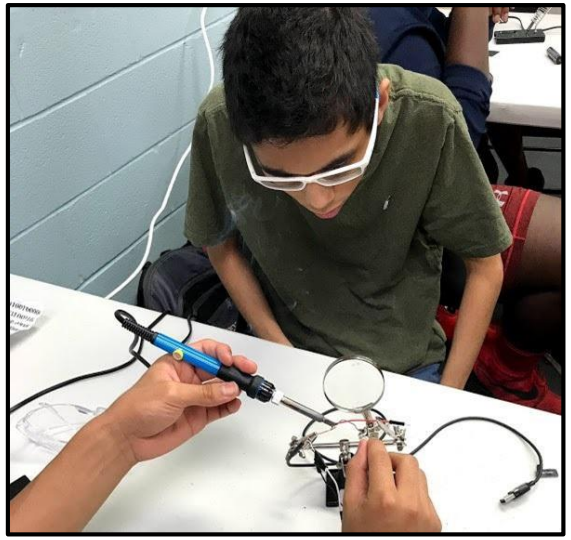
Theming

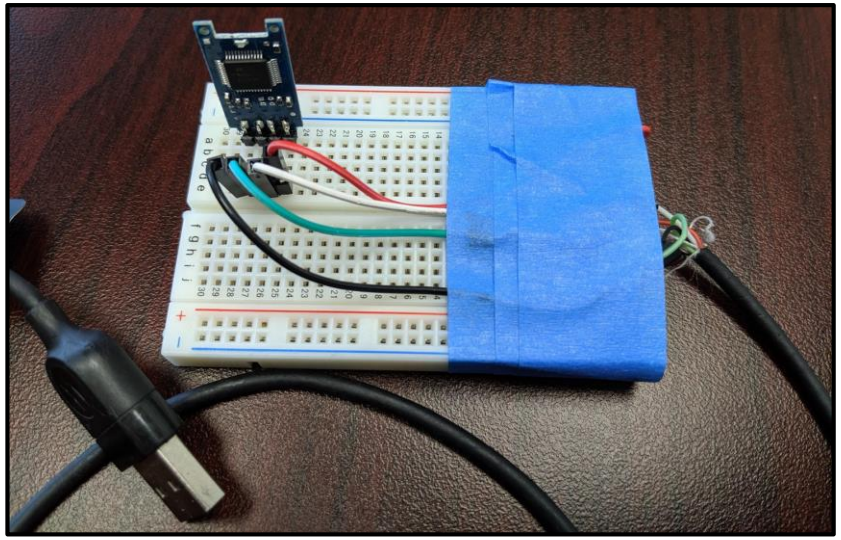
You can reuse the same concept with a different theme.

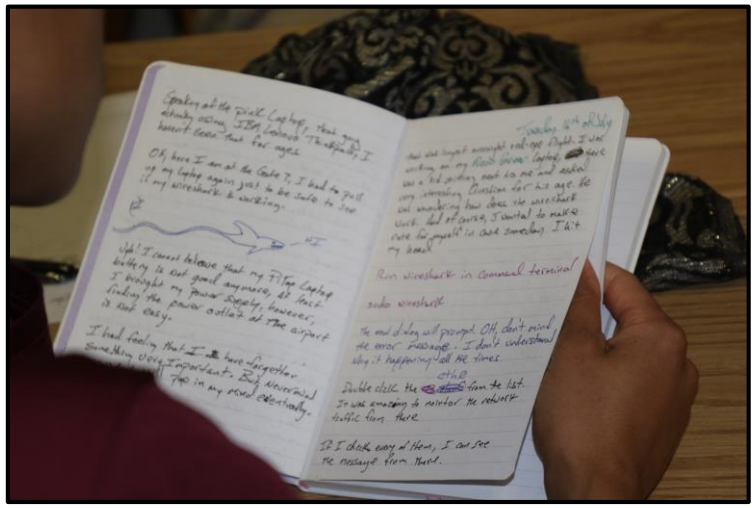


THE UNIVERSITY OF ALABAMA IN HUNTSVILLE
CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

Other Zones







THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

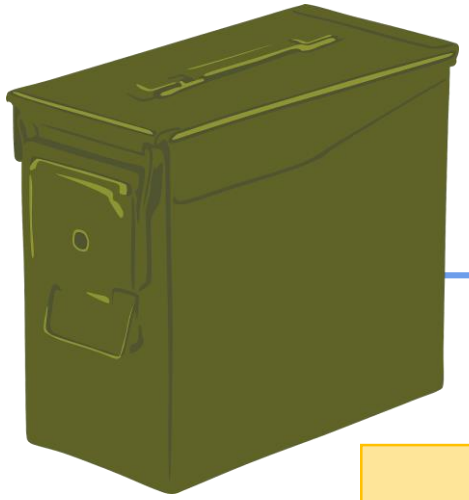
CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

How Do We Make These?

- Brainstorm a list of skills to be reviewed.
- Decide which questions you want them to solve (Who, What, When, Where, Why, How).
- List props.
- Map skills to questions to props.

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION



Lockbox

Start

Letter from a Friend

Lock Instructions

Locked Box

Caesar Cipher Ring

Encrypted Message

Book

Book Cipher & Instructions

"What type of cryptography uses the same key for both encryption and decryption?"

Goal: Review Question

Goal: What Happened?

"We have gone dark to avoid trouble from bad group"

Artifact

Puzzle

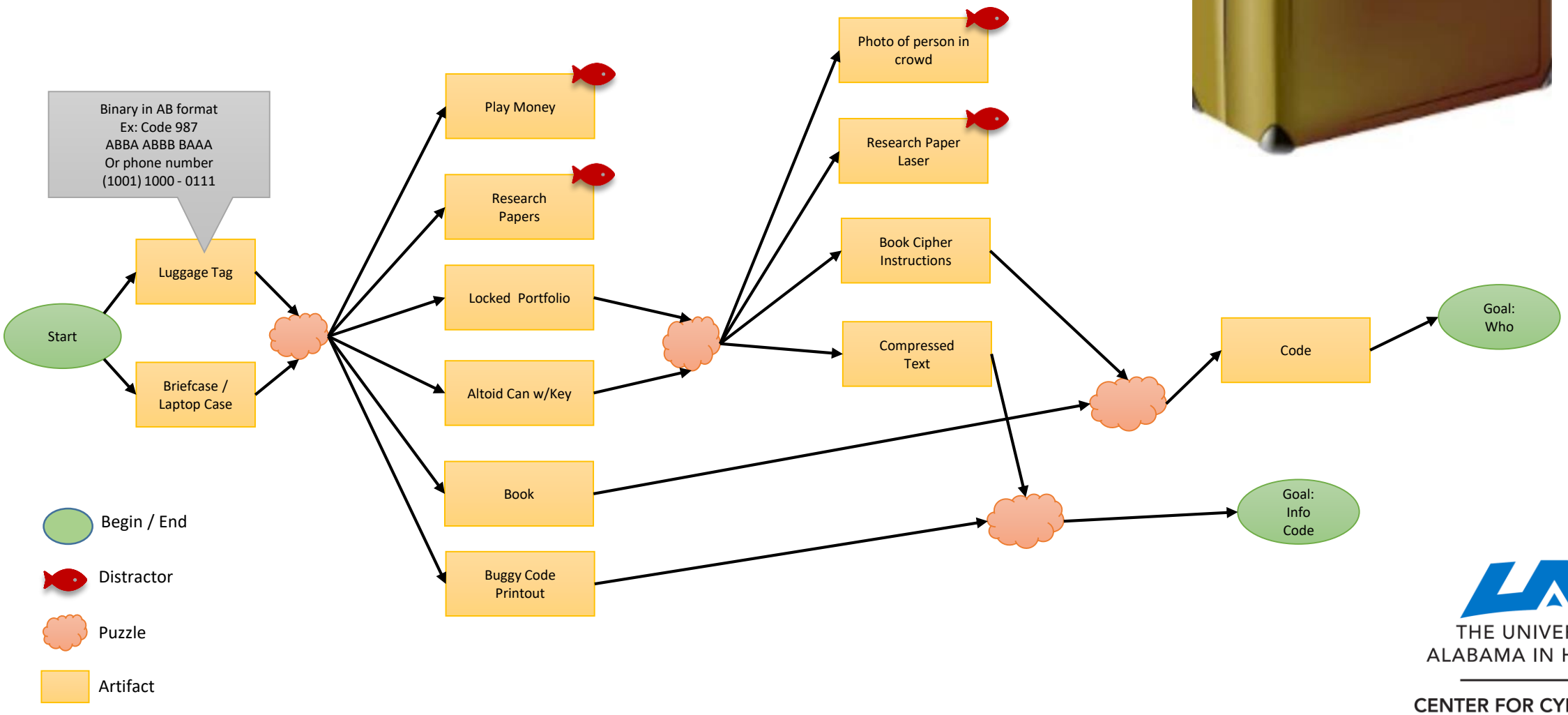
Distractor

Begin / End

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

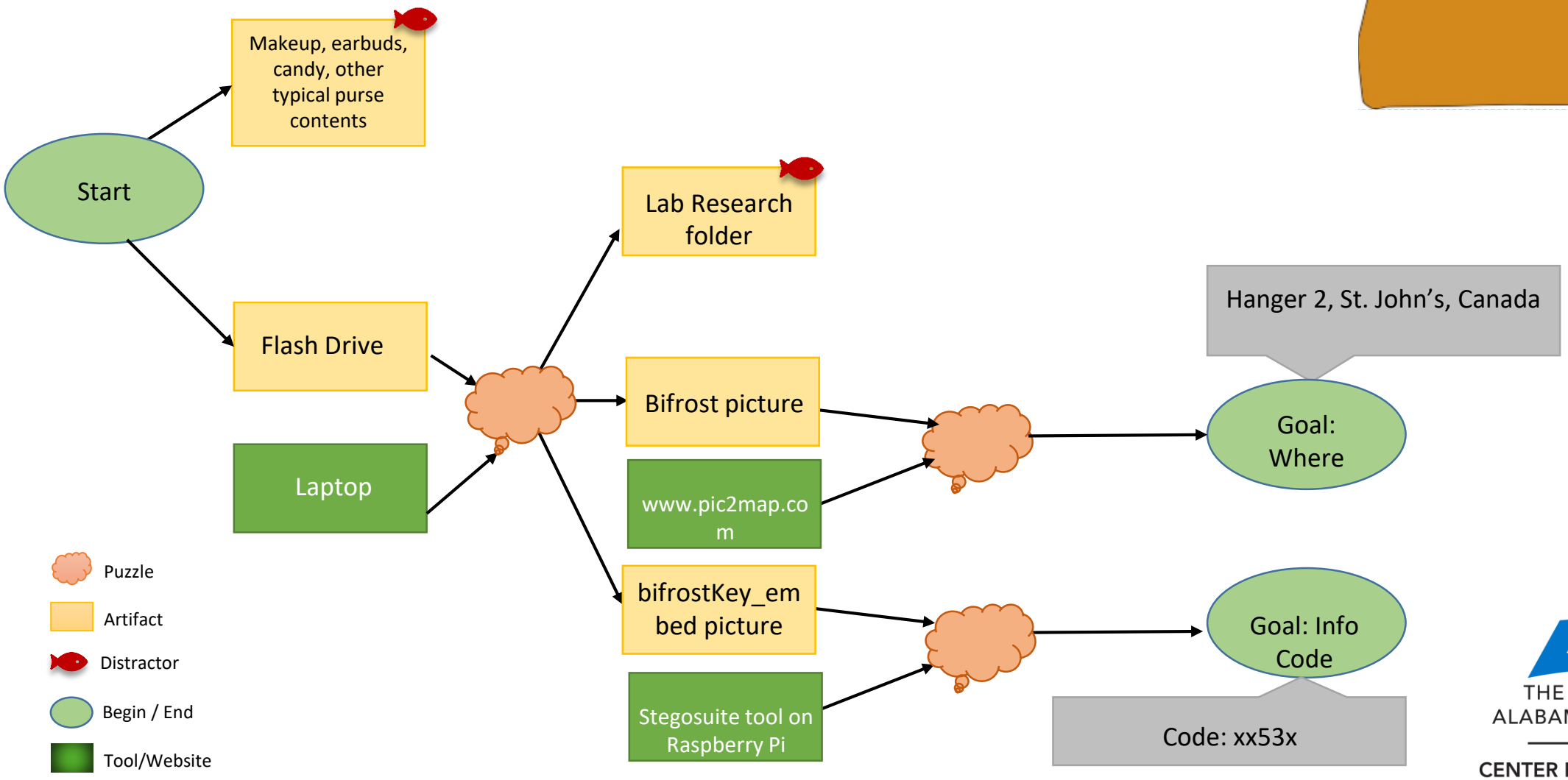
Briefcase



THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

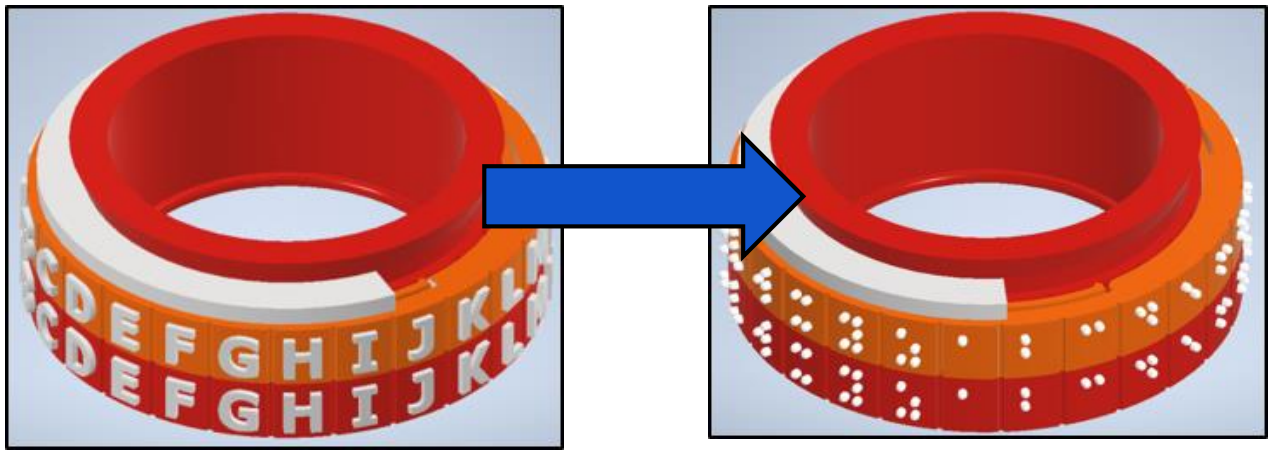
Purse



THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

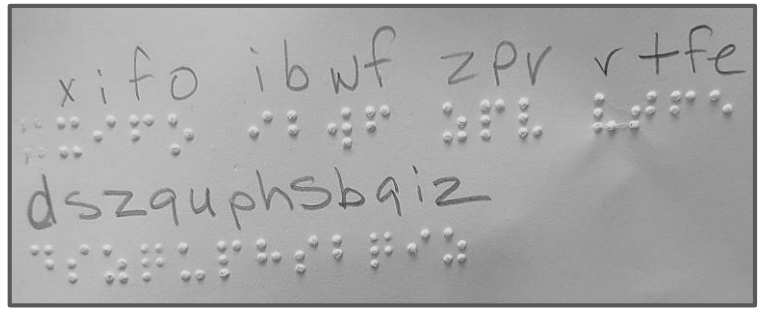
Adapting for Special Needs



tinyurl.com/EnglishCaesar

tinyurl.com/BrailleCaesar

Discovered the password to encrypted files by using clues from audio files.



THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

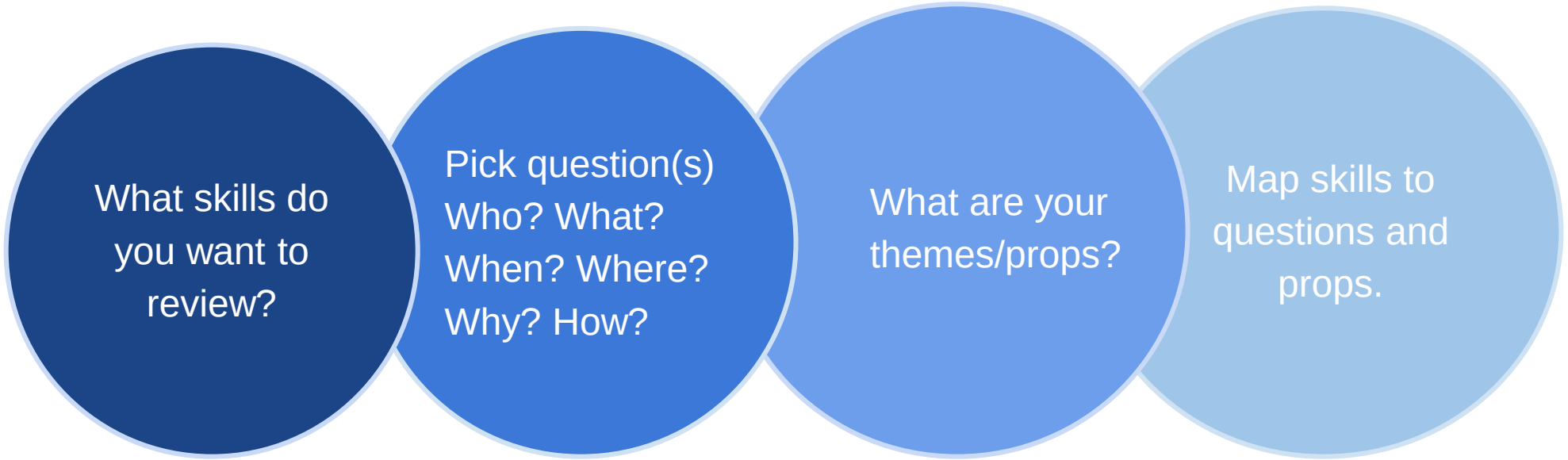
CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

Adapting for Special Needs

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

Brainstorm

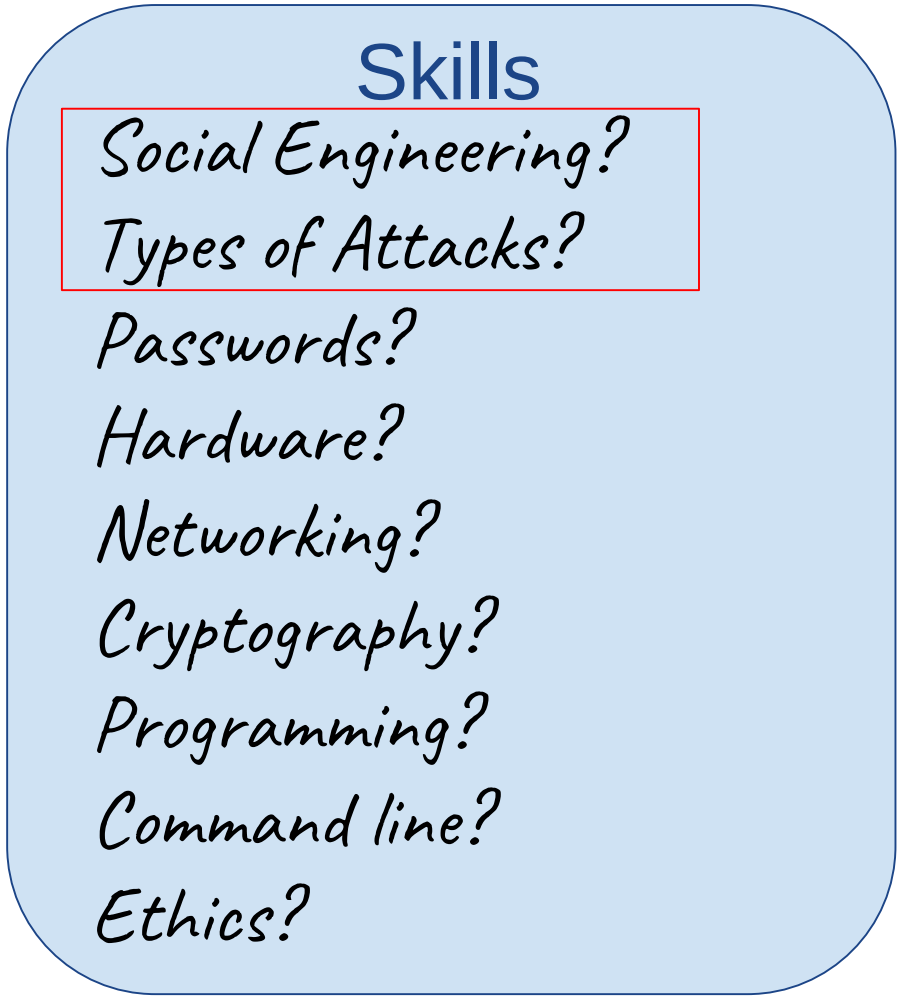


THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

Skills

What skill(s) do you want to teach?



THE UNIVERSITY OF ALABAMA IN HUNTSVILLE
CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

Story Questions

What question(s) should the students answer?

Questions

Who?

What?

When?

Where?

Why?

How?

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

Props/Themes

What props can you find?

- Thrift stores
- Junk rooms (surplus)
- Garage sales
- Drama department
- Friends/local businesses

What theme do you want to use?

Unfortunately, the medical industry is not immune to attack. A disgruntled former employee plans to launch an attack on the hospital. Your job is to use the clues available to **identify the attack vector** and **spot the attack before it happens**.

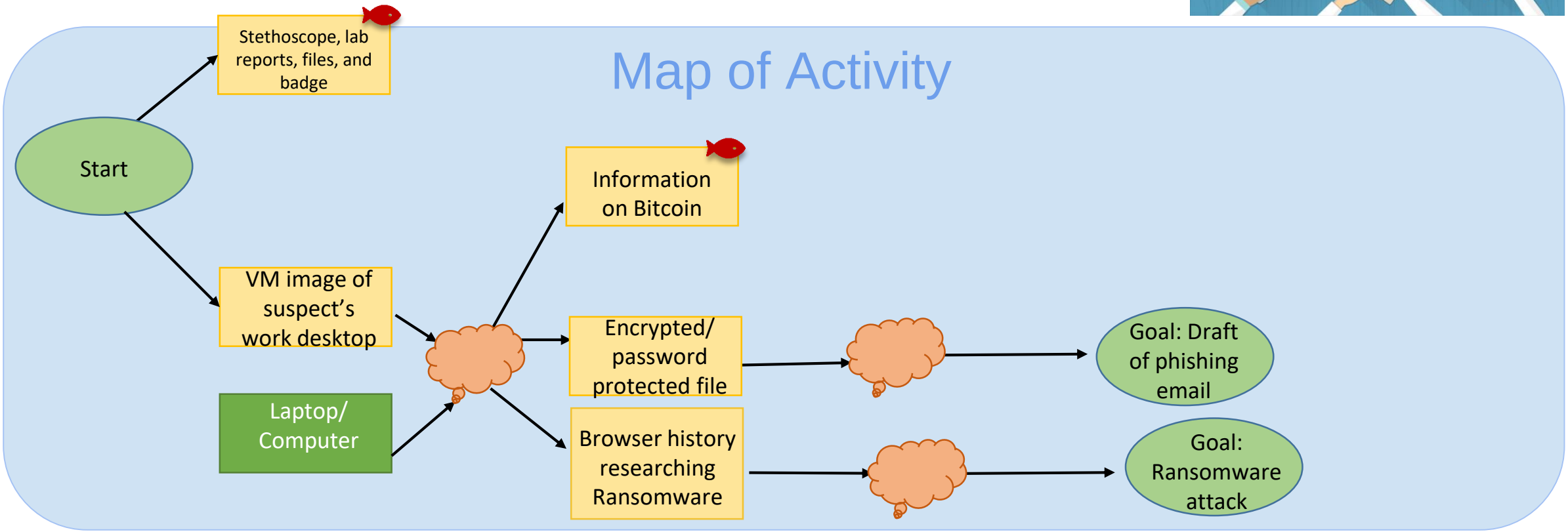
Themes/Props

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

Mapping

Map of Activity



Puzzle Artifact Distractor Begin / End Tool/Website

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION

Questions?

Resources: tinyurl.com/2019escapeNICE

Contact Info:

Jesse Hairston - jesse.hairston@uah.edu

Tania Williams - tania.williams@uah.edu

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

CENTER FOR CYBERSECURITY RESEARCH AND EDUCATION