Florida International University

Fall 2024 Senior Design Project

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PROBLEM

Students pursuing IT and cybersecurity careers at lack sufficient hands-on learning opportunities and confidence-building exercises in key technical areas. This gap hampers readiness for industry certifications like CompTIA A+ and Security+.

CURRENT SYSTEM

The existing curriculum focuses on theoretical knowledge but offers limited exposure to practical applications, such as command-line interface proficiency, programming, and network security.

REQUIREMENTS

Hardware:
- Windows
- Enable virtualization in BIOS settings

Software:
- VirtualBox
- VMWare
- Any other Hypervisor for virtualization

SYSTEM DESIGN

- **Platform**: A Virtual Machine pre-configured with challenges.
- **Environment**: Scenarios replicating real-world cybersecurity problems.
- **User Interaction**: Students interact with challenges using tools like command-line interfaces, and scripts.

OBJECT DESIGN

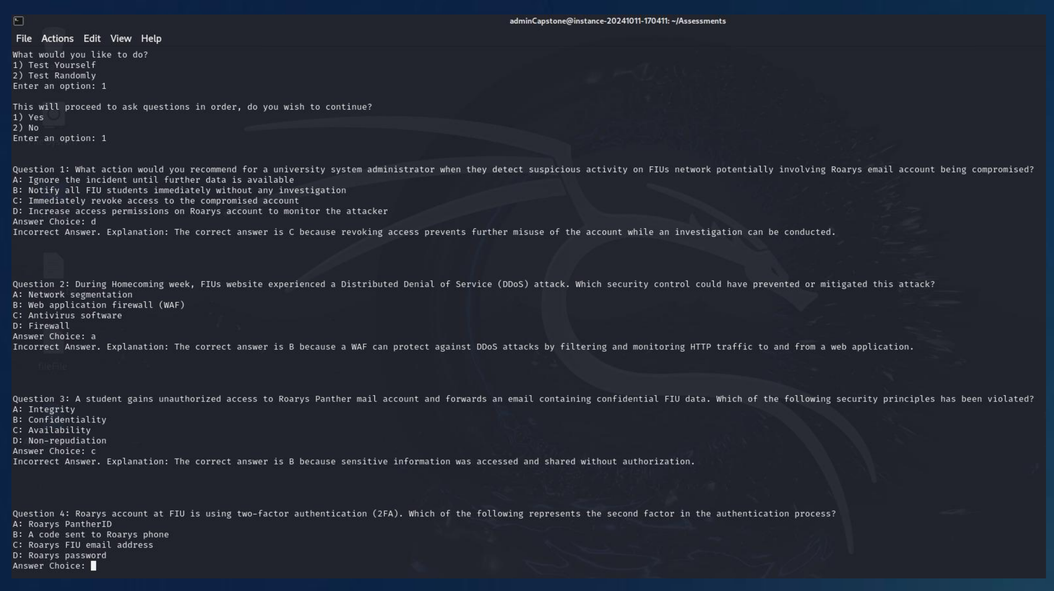
- **Linux and Windows Command-Line Challenges**: Tasks requiring students to navigate and execute commands.
- **Programming Modules**: Script-writing challenges in Python, Bash, and Java.
- **Network Security Tasks**: Activities to set up, analyze, and secure networks

IMPLEMENTATION

Users will need to import the ISO file into their chosen hypervisor. Once imported, they will have unrestricted access to the virtual machine. They can explore the preconfigured and deployed content, create their own directories or files, experiment with modifications, and even intentionally break the machine for troubleshooting practice

Contribution

- Designed and implemented questions aligned with Sec+ certification requirements to enhance users' readiness.
- Created an interactive educational experience by embedding questions with immediate feedback mechanisms.
- Identified and resolved issues during the implementation process to ensure accuracy and smooth functionality.
- Created hands-on tasks covering Linux commands, basic programming, and network security to supplement Security+ topics.



REFERENCES

SUMMARY

IT and cybersecurity students often lack hands-on learning opportunities, hindering certification readiness. To address this, we created a virtual machine platform with interactive challenges that simulate real-world scenarios. Students practice using tools like command-line interfaces and scripts, enhancing their technical skills and preparedness for certifications like CompTIA A+ and Security+.

ATTENTION: Subheadings shown above is a recommended structure for a research/scientific poster. Main elements of a poster are Introduction, Research and Conclusion. Researchers can customize the section headers based on their projects' needs. REMOVE THIS TEXT ONCE YOU START WORKING ON YOUR POSTER

ACKNOWLEDGEMENT

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