

CIS600 Internet of Things Security and Privacy

Fall 2025

Assignment 1

Due: 11:59pm on Wednesday, September 10, 2025

Total: 10 Points

ALL submissions should be via Blackboard. No hand delivery will be accepted. Late submissions will be graded out of 50%. The work submitted more than 3 days late gets automatic ZERO.

You are an IoT product development consultant of a company that manufactures smart home devices including security cameras and smart locks. The company is committed to ensuring the security and privacy of its customers. You are required to write a 3-page paper discussing the following issues related to security and privacy of IoT in smart homes:

1. IoT Security Challenges: Identify and analyze the security challenges associated with IoT devices in a smart home environment. Consider issues such as device vulnerabilities, data privacy issues concerns and the potential for unauthorized access. **[30%]**
2. Device Authentication and Authorization: Recommend strategies for ensuring robust device authentication and authorization within the smart home systems. Discuss the importance of secure communication channels and secure controls for preventing unauthorized access. **[30%]**
3. Device Encryption and Privacy: Discuss the role of data encryption in protecting sensitive information collected by smart home devices. Recommend encryption methods for data in transit and at rest. Address privacy concerns related to the collection and storage of user data. **[20%]**
4. Firmware and software updates: Propose a plan for ensuring timely and secure firmware and software updates for smart home devices. Consider the challenges of updating devices that may have limited resources or connectivity. **[20%]**

Note: You should provide a thorough summary of previous related work and may propose and discuss future work. You should also include a list of references that you have utilized during your search.

Format: Your paper must follow the following formatting standards: single spaced, Times New Roman (size 12), with one-inch margins on all sides. Citations and references must follow APA format.

Technical Report Evaluation Rubric

Technical Dimensions/ Weight	Does Not Meet Expectations (10%-30% points)	Meets Expectations (40%-70% points)	Exceeds Expectations (80%-100% points)	Score
IoT Security Challenges 30%	Fails to identify and analyze the security challenges associated with IoT devices in a smart home environment	Provides an adequate overview and general explanation on the security challenges associated with IoT devices in a smart home environment	Provides a thorough overview and thorough explanation on the security challenges associated with IoT devices in a smart home environment	
Device Authentication and Authorization 30%	Fails to recommend strategies for ensuring robust device authentication and authorization within the smart home systems.	Adequately explains and recommends strategies for ensuring robust device authentication and authorization within the smart home systems.	In-depth explanations and recommendations are provided on strategies for ensuring robust device authentication and authorization within the smart home systems.	
Device Encryption and Privacy 20%	Fails to adequately cover explanations and make recommendations of encryption methods for data in transit and at rest.	Adequately address explanations and make recommendations of encryption methods for data in transit and at rest.	Demonstrates in-depth research and analysis to make recommendations of encryption methods for data in transit and at rest.	
Firmware and software updates: 20%	Fails to provide appropriate plan for ensuring timely and secure firmware and software updates for smart home devices.	Demonstrates adequate level of understanding to propose an appropriate plan for ensuring timely and secure firmware and software updates for smart home devices	Provides in-depth explanations on design criteria, thoroughly discusses all required challenges and propose a plan for ensuring timely and secure firmware and software updates for smart home devices	
Previous Work/ Future Work 5%	Fails to summarize previous work or to discuss future work	Adequately summarizes previous work and discusses potential future work	Provides a thorough summary of previous work and proposes and discusses future work in detail	
Total 100%	Technical/Content Criteria			