Lab Assignment 7: Research Writing on Identity and Access Management

Instructions

Choose any THREE of the research prompts below. Write 2–3 well-structured paragraphs for each. Use at least one credible source per response (e.g., NIST publications, vendor whitepapers, cybersecurity news, government websites, or scholarly articles).

Research Writing Prompts (Choose 3)

1. **Password Attacks in the Wild**
   Research a real-world breach that involved a password attack (e.g., brute force, credential stuffing, or rule-based attack). What led to the breach? How could it have been prevented?
2. **Security Keys vs. Smart Cards**
   Compare the use of FIDO-based security keys and smart cards in enterprise environments. What are the benefits, limitations, and real-world use cases for each?
3. **Biometric Authentication Challenges**
   Discuss the trade-offs of using biometric authentication in terms of cost, privacy, and spoofing. Cite at least one example of a biometric system being bypassed.
4. **The Rise of Passkeys**
   Explore how passkeys are being adopted in place of traditional passwords. How do they work, and what security benefits and challenges do they bring?
5. **Single Sign-On (SSO) in Practice**
   Investigate how a company or university uses SSO to streamline access to multiple applications. What technologies (e.g., SAML, LDAP, OpenID) are involved?
6. **Access Control Models in the Workplace**
   Choose two access control models (e.g., DAC, MAC, RBAC, ABAC). Research how each is used in different environments (e.g., healthcare, military, cloud infrastructure).
7. **Salting, Peppering, and Key Stretching**
   Analyze how modern techniques like salting, peppering, and key stretching (e.g., bcrypt, PBKDF2, Argon2) help protect password digests. Reference best practices from NIST or OWASP.
8. **Behavioral Biometrics and Continuous Authentication**
   Explore the future of behavioral biometrics like keystroke dynamics. What are the pros and cons of continuous authentication in security-sensitive environments?