

QUANTUM DRIVEN SECURE PASSWORD MANAGER USING AWS CLOUD SERVICES

Domain: Cryptography




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MOTIVATION

-  Future-Proof with Quantum
-  Weak Security = Data at Risk
-  Legacy Systems are Vulnerable





PROBLEM STATEMENT

Current Password Systems are Vulnerable:

-  Quantum Key Cracking: Future decryption of stored passwords.
-  Insecure Key Exchange: Risk of interception in transit.
-  Weak Encryption: Vulnerable to brute-force attacks.

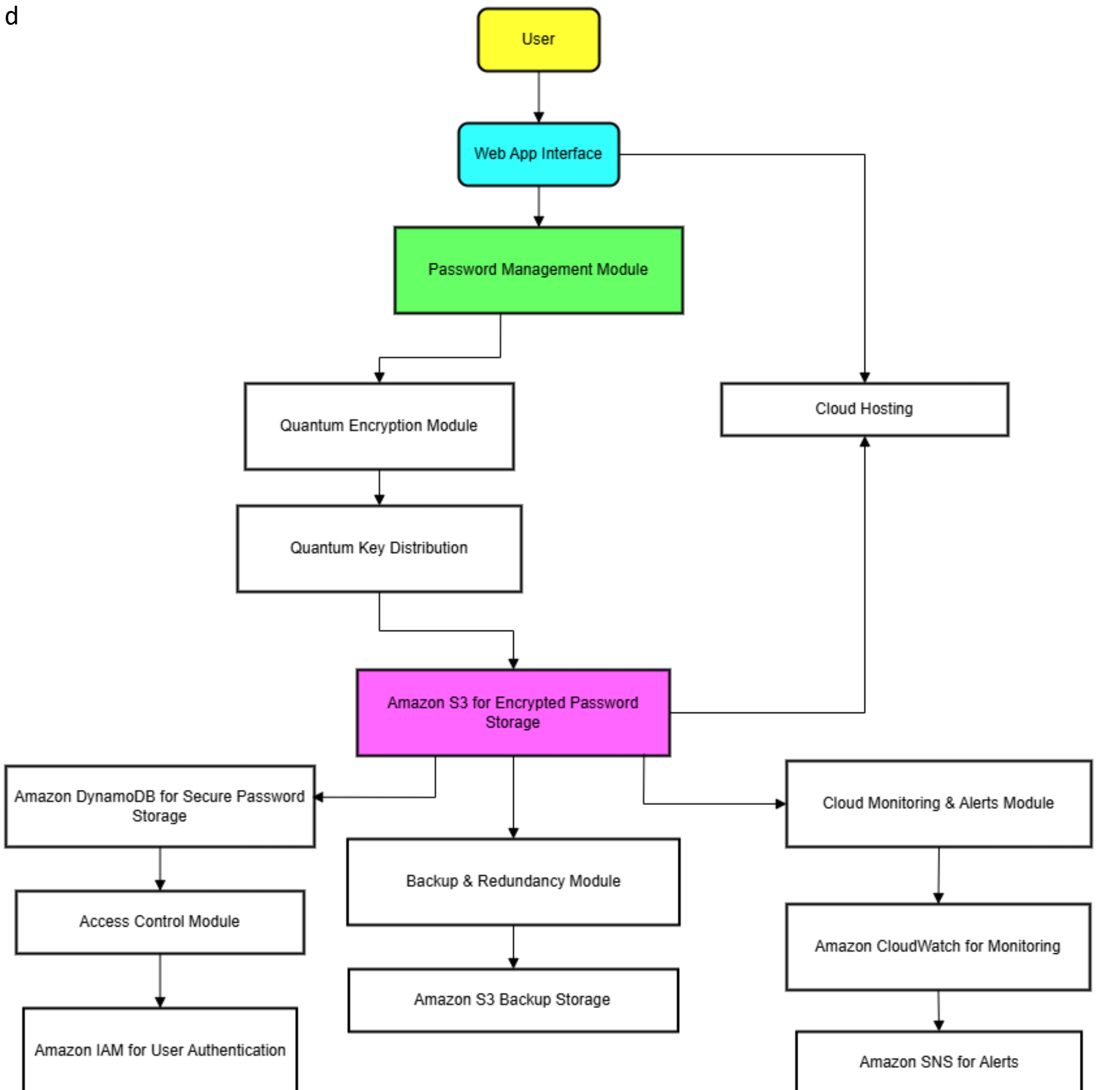
OBJECTIVE

To overcome existing vulnerabilities, our system utilizes:





-  Quantum-Safe Encryption: PQC algorithms (Kyber/NTRU) protect against future threats.
-  Hybrid Encryption: AES-256 + PQC Key Encapsulation for robust security.
-  Role-Based Access Control: Ensures authorized access only.
-  Secure Cloud Storage: Encrypted password data stored on AWS S3.

ARCHITECTURE DIAGRAM

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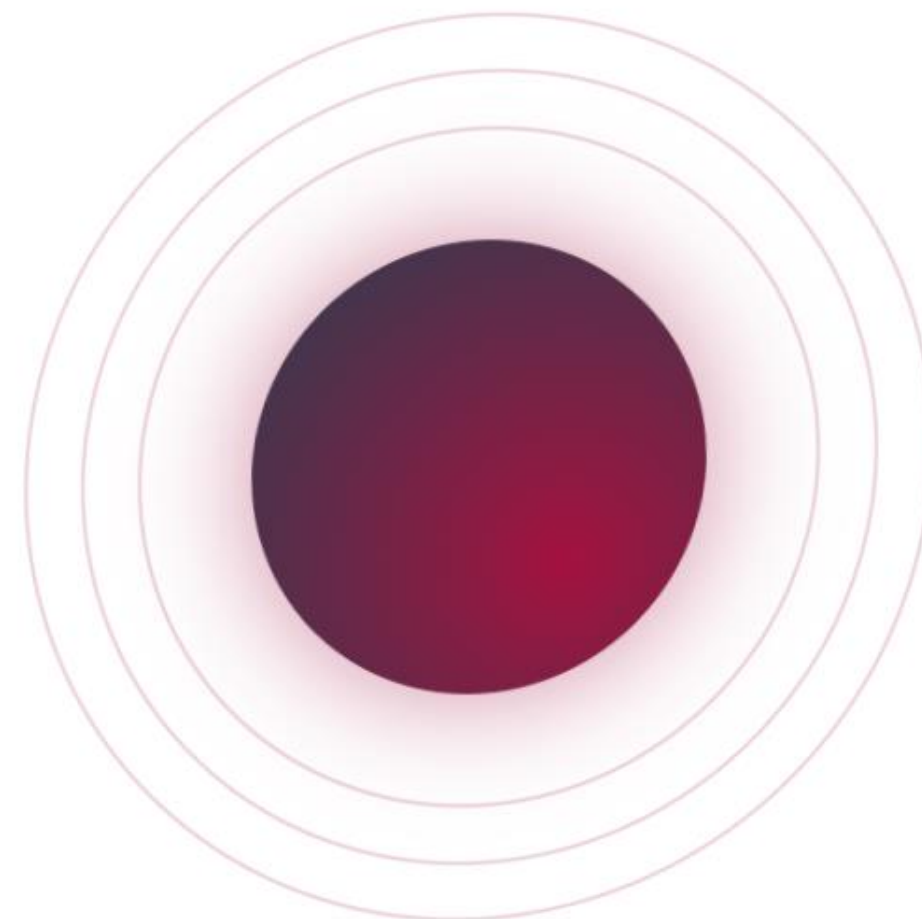
OUTCOME

-  Successfully implemented quantum-resistant password management using a hybrid encryption scheme (AES-256 + PQC), enhancing protection against future quantum threats.
-  Established secure key exchange leveraging simulated QKD protocols on Amazon Braket, demonstrating the potential of quantum-enhanced key distribution.
-  Built a secure password data storage system on AWS S3, ensuring that only authorized users can retrieve their encrypted credentials.
-  Implemented role-based access control, enforcing strict access policies and preventing unauthorized access to password data.



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Password Vaults



Quantum Pass



Dashboard



Generator



Settings



Logout

My Vaults

+ New Vault



google

7 entries



Open Vault

Password Generator



Quantum Pass



Dashboard



Generator



Settings



Logout

Quantum Password Generator

Generate cryptographically secure passwords using quantum randomness

Password Length



16 characters

Character Sets

- ☒ Uppercase Letters (A-Z)
- ☒ Lowercase Letters (a-z)
- ☒ Numbers (0-9)
- ☒ Special Characters (!@#\$%^&*)

Generated Password

4;{FxX)sM0fvzJ3D



 Generate New Password

Password Strength



Strong: Your password meets all security requirements!