1. Introduction (150 words)
-Benefits of using ASMIR software
-Still have security threat → one-way patient interface with public access
-report aims to outline security threats and preventions

2. Software Network (580 words)
-Interface
    -Patient
    -Reception
    -Medical Staff
-Database
    -doctor information – name, department, hospital ID, schedule
    -patient information – name, dob, address, NHS ID, email, mobile, appointment list
-Figure 1: Class Diagram
(100 words)

2.2. Security Threats
-injection attacks and Dos attacks would be strong choices for the one-way patient interface.
    -don't require a username or password
    -limited ability to use phishing techniques from this interface
(70 words)

2.2.1 SYN Attack
-what is needed to carry out the attack → knowledge of TCP/IP, network address
-how the attack is carried out → sending multiple SYN requests without ACKs in return
-what can be accomplished by the attack → denial of service
(70 words)

2.2.2. SQL Injection
-what is needed to carry out the attack → knowledge of injection script
-how the attack is carried out → injecting script directly to interface or in URL
-what can be accessed from the attack → software database
(70 words)

2.2.3 Cross-site Scripting
-what is needed to carry out the attack → knowledge of cross-site script
-how the attack is carried out →
-what can be accessed from the attack → software database
(70 words)

2.2.4 Buffer Overwrite
-what is needed to carry out the attack → knowledge of buffer regulation script
-how the attack is carried out → overloading the buffer maximum
-what can be accessed from the attack → software database
(70 words)

2.2.5. Escalation Scenarios
-gaining access to doctor information → elevated privilege, can see patient medical records

-Figure 2: Threat Model 1
-gaining access to patient information → send out phishing email, can gain access to additional sensitive information
-Figure 3: Threat Model 2
(150 words)

3. Prevention and Mitigation (820 words)
-need to limit attacker's ability to override the intended use of the patient interface
-will discuss the strengths and weaknesses
(50 words)

3.1 Injection Prevention
-username specifications in code → prevents SQL injections
-context-sensitive server side output coding → prevents XSS attacks
-buffer specifications in code → prevents buffer overwrite attacks
-RCA encryption for data in database → protects database against unverified IPs/users
-examples of successful implementation
-Figure 4: Sequence Diagram
(100 words)

3.1.1 Strengths of the Methods
(150 words)

3.1.2 Weaknesses of the Methods
(150 words)

3.2 Layer 2 protection
-Firewall → stops unwanted packages
-TCP/IP protocol → protects the GET process
-examples of successful implementation
(70 words)

3.2.1 Strengths of the Methods
(150 words)

3.2.2 Weaknesses of the Methods
(150 words)

4. Discussion (350) words
-Discuss the implications of the strengths and weakness of the proposed solutions
-how these can be improved upon
-how they can be monitored
-recommendations for maintenance

5. Conclusion (100 words)

Resources (Partial, TBD)

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Howard, Michael, and David. LeBlanc. *Writing Secure Code*. 2nd ed. Sebastopol: Microsoft Press, 2004. Print.

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