

DAFTAR ISI

| | |
|--------------------------------------|------|
| HALAMAN SAMPUL | i |
| HALAMAN JUDUL | ii |
| HALAMAN PERSETUJUAN | iii |
| HALAMAN PENGESAHAN | iv |
| HALAMAN PERNYATAAN KEASLIAN | v |
| HALAMAN PERSEMBAHAN | vi |
| HALAMAN MOTTO | vii |
| KATA PENGANTAR | viii |
| DAFTAR ISI | x |
| DAFTAR TABEL | xii |
| DAFTAR GAMBAR | xiii |
| DAFTAR LAMPIRAN | xv |
| INTISARI | xvi |
| <i>ABSTRACT</i> | xvii |
| BAB I PENDAHULUAN | |
| A. Latar Belakang Masalah | 1 |
| B. Rumusan Masalah | 5 |
| C. Batasan Masalah | 5 |
| D. Tujuan Penelitian | 5 |
| E. Manfaat Penelitian | 5 |
| BAB II TINJAUAN PUSTAKA | |
| A. Landasan Teori | 7 |
| B. Penelitian Sebelumnya | 44 |
| BAB III METODE PENELITIAN | |
| A. Tempat dan Waktu Penelitian | 48 |
| B. Metode Pengumpulan Data | 48 |
| C. Alat dan Bahan Penelitian | 50 |
| D. Konsep Penelitian | 51 |
| BAB IV HASIL DAN PEMBAHASAN | |

| | |
|----------------------------------------|-----|
| A. <i>Information Gathering</i> | 56 |
| B. <i>Vulnerability Analysis</i> | 65 |
| C. <i>Exploitation</i> | 78 |
| D. <i>Reporting</i> | 93 |
| E. Pembahasan | 96 |
| BAB V PENUTUP | |
| A. Kesimpulan | 100 |
| B. Saran | 101 |
| DAFTAR PUSTAKA | |
| LAMPIRAN | |



DAFTAR TABEL

| | |
|------------------------------------------------------------------|----|
| Tabel 2. 1 Penelitian Sebelumnya | 46 |
| Tabel 4. 1 Hasil <i>Information Gathering</i> | 61 |
| Tabel 4. 2 Klasifikasi kerentanan berdasarkan OWASP Top 10 | 75 |
| Tabel 4. 3 Hasil <i>Penetration Testing</i> | 93 |



DAFTAR GAMBAR

| | |
|-------------------------------------------------------------------------|----|
| Gambar 2. 1 Karakteristik sistem | 11 |
| Gambar 2. 2 CIA Triad | 16 |
| Gambar 2. 3 <i>Interruption</i> | 17 |
| Gambar 2. 4 <i>Interception</i> | 18 |
| Gambar 2. 5 <i>Modification</i> | 18 |
| Gambar 2. 6 <i>Fabrication</i> | 19 |
| Gambar 2. 7 Kerentanan OWASP Top 10 2021 | 40 |
| Gambar 3. 1 Kerangka Berpikir | 51 |
| Gambar 4. 1 Hasil <i>Information Gathering</i> dengan Nslookup | 56 |
| Gambar 4. 2 Hasil <i>Information Gathering</i> dengan Whois | 57 |
| Gambar 4. 3 Hasil <i>Information Gathering</i> dengan Subfinder | 57 |
| Gambar 4. 4 Hasil <i>Information Gathering</i> dengan Nmap | 58 |
| Gambar 4. 5 Hasil <i>Information Gathering</i> dengan Nmap 2 | 59 |
| Gambar 4. 6 Hasil <i>Information Gathering</i> dengan Whatweb | 60 |
| Gambar 4. 7 Jumlah <i>alert</i> dan jenis <i>alert</i> | 66 |
| Gambar 4. 8 <i>Absence of Anti-CSRF Tokens</i> | 66 |
| Gambar 4. 9 <i>Content Security Policy (CSP) Header Not Set</i> | 67 |
| Gambar 4. 10 <i>Missing Anti-clickjacking Header</i> | 68 |
| Gambar 4. 11 <i>Cookie Without Secure Flag</i> | 68 |
| Gambar 4. 12 <i>Cookie without SameSite Attribute</i> | 69 |
| Gambar 4. 13 <i>Secure Pages Include Mixed Content</i> | 70 |
| Gambar 4. 14 <i>Server Leaks Version Information via "Server"</i> | 70 |
| Gambar 4. 15 <i>Strict-Transport-Security Header Not Set</i> | 71 |
| Gambar 4. 16 <i>X-Content-Type-Options Header Missing</i> | 72 |
| Gambar 4. 17 <i>Disclosure - Suspicious Comments</i> | 73 |
| Gambar 4. 18 <i>Modern Web Application</i> | 74 |
| Gambar 4. 19 <i>Session Management Response Identified</i> | 74 |
| Gambar 4. 20 Pengujian <i>Absence of Anti-CSRF Tokens</i> | 78 |
| Gambar 4. 21 <i>Script</i> eksploitasi CSRF | 79 |

| | |
|----------------------------------------------------------------------------------|----|
| Gambar 4. 22 Hasil <i>Exploitation Absence of Anti-CSRF Tokens</i> | 80 |
| Gambar 4. 23 Token Anti CSRF pada halaman <i>subscribe email</i> | 80 |
| Gambar 4. 24 <i>Script</i> Pengujian halaman <i>subscriber</i> | 81 |
| Gambar 4. 25 Pengujian <i>Content Security Policy (CSP) Header Not Set</i> | 82 |
| Gambar 4. 26 Pengujian <i>Clickjacking</i> | 83 |
| Gambar 4. 27 <i>Script</i> HTML untuk menguji <i>Clickjacking</i> | 83 |
| Gambar 4. 28 Pembanding pengujian <i>Anti-clickjacking Header</i> | 84 |
| Gambar 4. 29 Pengujian <i>Cookie Without Secure Flag</i> | 85 |
| Gambar 4. 30 Pengujian <i>Cookie without SameSite Attribute</i> | 86 |
| Gambar 4. 31 Pengujian <i>Secure Pages Include Mixed Content</i> | 87 |
| Gambar 4. 32 Pengujian <i>Server Leaks Version</i> | 88 |
| Gambar 4. 33 Pengujian <i>Security Header Not Set</i> | 89 |
| Gambar 4. 34 Pengujian <i>Information Disclosure</i> | 90 |
| Gambar 4. 35 <i>Session Management Response Identified</i> | 92 |
| Gambar 4. 36 Penggantian <i>cookie</i> | 92 |

DAFTAR LAMPIRAN

Lampiran 1 Wawancara

Lampiran 2 Surat Izin Penelitian

Lampiran 3 Kartu Bimbingan Dosen Pembimbing 1

Lampiran 4 Kartu Bimbingan Dosen Pembimbing 2

