

## DAFTAR ISI

|  |      |
|--|------|
| ABSTRAK  | ii   |
| <i>ABSTRACT</i>  | iii  |
| LEMBAR PENGESAHAN  | iv   |
| LEMBAR PERNYATAAN ORISINALITAS                               | v    |
| KATA PENGANTAR   | vi   |
| Daftar Isi   | vii  |
| Daftar Gambar  | x    |
| Daftar Tabel   | xii  |
| Daftar Lampiran  | xiii |
| Daftar Istilah   | xiv  |
| Bab I PENDAHULUAN  | 1    |
| I.1 Latar Belakang   | 1    |
| I.2 Perumusan Masalah  | 2    |
| I.3 Tujuan Penelitian  | 3    |
| I.4 Batasan Penelitian                                       | 3    |
| I.5 Manfaat Penelitian                                       | 4    |
| I.6 Sistematika Penulisan                                    | 4    |
| Bab II TINJAUAN PUSTAKA                                      | 6    |
| II.1 Aplikasi Web  | 6    |
| II.1.1 PHP   | 6    |
| II.1.2 Python  | 7    |
| II.1.3 Javascript  | 7    |
| II.2 Algoritma <i>Optimization</i>                           | 8    |
| II.2.1 <i>Constraint Programming Satisfiability (CP-SAT)</i> | 8    |
| II.2.2 <i>Assignment Problem</i>                             | 9    |

|               |                                  |    |
|---------------|----------------------------------|----|
| II.2.3        | Google OR-Tools                  | 9  |
| <i>II.3</i>   | <i>Tools Modelling</i>           | 10 |
| <i>II.3.1</i> | <i>Use Case Diagram</i>          | 10 |
| <i>II.3.2</i> | <i>Activity diagram</i>          | 10 |
| <i>II.3.3</i> | <i>Deployment Diagram</i>        | 10 |
| II.4          | Pengembangan Perangkat Lunak     | 11 |
| <i>II.5</i>   | <i>Scenario Testing</i>          | 16 |
| II.6          | Functional Testing               | 17 |
| Bab III       | METODOLOGI PENELITIAN            | 18 |
| III.1         | Model Konseptual                 | 18 |
| III.2         | Sistematika Penyelesaian Masalah | 20 |
| Bab IV        | ANALISIS DAN PERANCANGAN         | 26 |
| IV.1          | Pengumpulan Kebutuhan            | 26 |
| IV.2          | Perencanaan                      | 37 |
| IV.3          | Modelling                        | 39 |
| IV.3.1        | <i>Use Case Diagram</i>          | 40 |
| IV.3.2        | <i>Activity diagram</i>          | 41 |
| IV.3.3        | Sequence Diagram                 | 43 |
| IV.3.4        | Entity Relationship Diagram      | 44 |
| IV.3.5        | Deployment Diagram               | 46 |
| IV.3.6        | <i>Automation code</i>           | 47 |
| Bab V         | IMPLEMENTASI DAN PENGUJIAN       | 52 |
| V.1           | Implementasi                     | 52 |
| V.1.1         | Frontend                         | 52 |
| V.1.2         | <i>Controller</i>                | 55 |
| V.1.3         | <i>Automation code</i>           | 58 |

|                                 |    |
|---------------------------------|----|
| V.2 Pengujian                   | 63 |
| <i>V.2.1 Functional Testing</i> | 64 |
| <i>V.2.2 Scenario Testing</i>   | 65 |
| Bab VI KESIMPULAN DAN SARAN     | 67 |
| VI.1 Kesimpulan                 | 67 |
| VI.2 Saran                      | 67 |
| DAFTAR PUSTAKA                  | 68 |