

## DAFTAR ISI

|  |           |
|--|-----------|
| KATA PENGANTAR .....                               | i         |
| ABSTRACT.....                                      | ii        |
| ABSTRAK.....                                       | iii       |
| DAFTAR ISI.....                                    | iv        |
| DAFTAR GAMBAR .....                                | vi        |
| DAFTAR TABEL.....                                  | vii       |
| <b>BAB I PENDAHULUAN .....</b>                     | <b>1</b>  |
| 1.1 Latar Belakang Masalah.....                    | 1         |
| 1.2 Rumusan Masalah .....                          | 3         |
| 1.3 Tujuan Penelitian.....                         | 3         |
| 1.4 Batasan Masalah.....                           | 3         |
| 1.5 Metodologi Penelitian .....                    | 4         |
| 1.5.1 Teknik Pengumpulan Data.....                 | 4         |
| 1.6 Kerangka Pemikiran.....                        | 6         |
| 1.7 Sistematika Penulisan.....                     | 6         |
| <b>BAB II LANDASAN TEORI .....</b>                 | <b>8</b>  |
| 2.1 State of The Art .....                         | 8         |
| 2.2 Perusahaan.....                                | 10        |
| 2.3 Peramalan .....                                | 11        |
| 2.4 Single Eksponential Smoothing .....            | 13        |
| 2.5 K-Nearest Neighbor (KNN).....                  | 14        |
| 2.6 Prototype .....                                | 15        |
| 2.7 Unified Modelling Language (UML).....          | 17        |
| 2.7.1 Use Case Diagram.....                        | 18        |
| 2.7.2 Activity Diagram.....                        | 18        |
| 2.7.3 Sequence Diagram .....                       | 19        |
| 2.8 Class Diagram .....                            | 21        |
| 2.9 Database .....                                 | 23        |
| 2.10 CDM dan PDM .....                             | 24        |
| 2.11 Black-box Testing .....                       | 25        |
| <b>BAB III ANALISIS DAN PEMBAHASAN SISTEM.....</b> | <b>27</b> |
| 3.1 Analisis Masalah .....                         | 27        |
| 3.2 Analisis Sumber Data.....                      | 28        |
| 3.3 Analisis Kebutuhan .....                       | 28        |

|                                  |  |    |
|----------------------------------|--|----|
| 3.2.1                            | Analisi Kebutuhan Software Dan Hardware.....                           | 28 |
| 3.2.2                            | Analisis Metode KNN.....   | 30 |
| 3.2.3                            | Analisis Perhitungan Manual Metode KNN .....                           | 30 |
| 3.2.4                            | Analisis Metode Single Eksponetial Smoothing.....                      | 36 |
| 3.2.5                            | Analisis Perhitungan Manual Metode Single Eksponential Smoothing ..... | 36 |
| 3.4                              | Arsitektur Sistem.....   | 40 |
| 3.5                              | Pemodelan Sistem .....   | 40 |
| 3.5.1                            | Use Case Diagram.....  | 41 |
| 3.5.2                            | <i>Activiy Diagram</i> .....   | 46 |
| 3.5.3                            | <i>Class Diagram</i> .....   | 48 |
| 3.5.4                            | Sequence Diagram .....   | 49 |
| 3.5.5                            | <i>Conseptual Data Model</i> .....                                     | 52 |
| 3.5.6                            | <i>Physical Data Model</i> .....                                       | 53 |
| 3.5.7                            | Perancangan antar muka .....   | 53 |
| BAB IV IMPLEMENTASI SISTEM ..... |  | 60 |
| 4.1                              | Persiapan Arsitektur .....   | 60 |
| 4.1.1                            | Perangkat lunak (Software).....  | 60 |
| 4.1.2                            | Persiapan Perangkat Keras (Hardware) .....                             | 60 |
| 4.2                              | Implementasi .....   | 60 |
| 4.2.1                            | Implementasi Database .....  | 61 |
| 4.2.2                            | Implementasi Antar Muka.....   | 62 |
| 4.3                              | Pengujian Sistem .....   | 70 |
| 4.3.1                            | Pengujian Fungsional Perangkat Lunak.....                              | 70 |
| 4.4                              | Pengujian Data .....   | 73 |
| BAB V PENUTUP.....               |  | 82 |
| 5.1                              | Kesimpulan.....  | 82 |
| 5.2                              | Saran .....  | 82 |
| DAFTAR PUSTAKA .....             |  | 83 |
| LAMPIRAN.....                    |  | 85 |

## DAFTAR GAMBAR

|  |    |
|--|----|
| Gambar 1.1 Kerangka Pemikiran.....                                       | 6  |
| Gambar 2.1 Model <i>Prototype</i> [7].....                               | 15 |
| Gambar 3.1 Flowchart Proses Peramalan KNN.....                           | 30 |
| Gambar 3.2 Flowchart Proses Peramalan Single Eksponential Smoothing..... | 36 |
| Gambar 3.3 Arsitektur Sistem.....  | 40 |
| Gambar 3.3 Use Case Diagram.....   | 41 |
| Gambar 3.4 Activity diagram kelola produk.....                           | 46 |
| Gambar 3.5 Activity diagram kelola penjualan. ....                       | 47 |
| Gambar 3.6 Activity diagram lihat hasil peramalan. ....                  | 48 |
| Gambar 3.7 Class diagram aplikasi peramalan. ....                        | 49 |
| Gambar 3.9 Sequence diagram kelola penjualan. ....                       | 51 |
| Gambar 3.10 Sequence diagram lihat hasil peramalan. ....                 | 52 |
| Gambar 3.11 <i>Conseptual Data Model</i> aplikasi peramalan. ....        | 52 |
| Gambar 3.12 <i>Pysical Data Model</i> aplikasi peramalan. ....           | 53 |
| Gambar 3.11 Perancangan antar muka menu produk. ....                     | 53 |
| Gambar 3.12 Perancangan antar muka menu penjualan. ....                  | 54 |
| Gambar 3.12 Perancangan antar muka hasil peramalan. ....                 | 54 |
| Gambar 4.1 Tabel users.....  | 61 |
| Gambar 4.2 Tabel Produk.....   | 61 |
| Gambar 4.3 Tabel penjualans.....   | 62 |
| Gambar 4.4 Halaman Produk.....   | 62 |
| Gambar 4.5 Halaman Penjualan.....  | 63 |
| Gambar 4.6 Hasil Peramalan KNN.....                                      | 63 |
| Gambar 4.7 Hasil Peramalan SES.....                                      | 69 |

## DAFTAR TABEL

|   |    |
|---|----|
| Tabel 2.1 <i>State Of The Art</i> .....   | 8  |
| Tabel 2.1 <i>State Of The Art</i> .(lanjutan).....                              | 9  |
| Tabel 2.1 Simbol pada <i>Use Case Diagram</i> .....                             | 18 |
| Tabel 2.2 Simbol pada <i>Activity Diagram</i> .....                             | 19 |
| Tabel 2.3 Simbol pada <i>Sequence Diagram</i> .....                             | 20 |
| Tabel 2.3 Simbol pada <i>Sequence Diagram</i> (Lanjutan) .....                  | 21 |
| Tabel 2.4 Simbol pada <i>Class Diagram</i> .....                                | 22 |
| Tabel 2.4 Simbol pada <i>Class Diagram</i> (Lanjutan).....                      | 23 |
| Tabel 2.5 Simbol-simbol CDM.....  | 24 |
| Tabel 2.5 Simbol-simbol CDM (Lanjutan).....                                     | 25 |
| Tabel 2.6 Simbol-simbol PDM .....   | 25 |
| Tabel 3.1 Data Tahun 2018.....  | 28 |
| Tabel 3.2 Data Tahun 2018.....  | 28 |
| Tabel 3.5 Data Penjualan Amprolin – 300 WS 1000gram.....                        | 31 |
| Tabel 3.6 Data <i>input</i> dan <i>data</i> target.....                         | 32 |
| Tabel 3.7 Data Uji.....   | 33 |
| Tabel 3.8 Normalisasi data training dan data uji.....                           | 33 |
| Tabel 3.8 Normalisasi data training dan data uji lanjutan.....                  | 34 |
| Tabel 3.9 Hasil perhitungan jarak euclidian distance.....                       | 34 |
| Tabel 3.10 Hasi pengurutan dan pengambilan data sebanyak nilai K.....           | 35 |
| Tabel 3.11 Data Penjualan Tahun 2017-2018.....                                  | 37 |
| Tabel 3.11 Data Penjualan Tahun 2017-2018 lanjutan.....                         | 38 |
| Tabel 3.12 Hasil peramalan menggunakan metode single eksponetial smoothing..... | 39 |
| Tabel 3.13 Definisi Aktor .....   | 41 |
| Tabel 3.14 Definisi Use Case.....   | 42 |
| Tabel 3.14 Definisi Use Case lanjutan.....                                      | 42 |
| Tabel 3.15 Skenario <i>login</i> .....  | 43 |
| Tabel 3.16 Skenario use case kelola produk .....                                | 43 |
| Tabel 3.17 Skenario use case kelola Penjualan.....                              | 44 |
| Tabel 3.18 Skenario use case lihat hasil peramalan.....                         | 44 |
| Tabel 3.19 Skenario use case lihat hasil peramalan KNN .....                    | 45 |
| Tabel 3.20 Skenario use case lihat hasil peramalan SES .....                    | 45 |

|   |    |
|---|----|
| Tabel 4.1 Pengujian halaman login.....                      | 70 |
| Tabel 4.1 Pengujian halaman login (lanjutan) .....          | 70 |
| Tabel 4.2 pengujian halaman produk .....                    | 71 |
| Tabel 4.3 Pengujian Halaman penjualan.....                  | 72 |
| Tabel 4.3 Pengujian Halaman penjualan (lanjutan) .....      | 72 |
| Tabel 4.4 Pengujian halaman peramalan .....                 | 72 |
| Tabel 4.5 Pengujian Data Amprolin-300 WS @ 100 gram .....   | 73 |
| Tabel 4.6 Pengujian Data Amprolin-300 WS @ 1000 gram .....  | 74 |
| Tabel 4.7 Pengujian Data Dimoxan WS @ 100 gram .....        | 74 |
| Tabel 4.8 Pengujian Data Dimoxan WS @ 1000 gram .....       | 75 |
| Tabel 4.9 Pengujian Data Interspectin-L @ 100 ml.....       | 75 |
| Tabel 4.10 Pengujian Data Intertrim LA @ 100 ml.....        | 76 |
| Tabel 4.11 Pengujian Data Intracox Oral @ 100 ml.....       | 76 |
| Tabel 4.12 Pengujian Data Intracox Oral @ 1000 ml.....      | 77 |
| Tabel 4.13 Pengujian Data Introvit E-Selen @ 100 ml .....   | 77 |
| Tabel 4.14 Pengujian Data Introvit E-Selen @ 100 gram.....  | 78 |
| Tabel 4.15 Pengujian Data Introvit E-Selen @ 1000 gram..... | 78 |
| Tabel 4.16 Pengujian Data Limoxin-200 LA @ 100 ml.....      | 79 |
| Tabel 4.17 Pengujian Data Penstrep-400 @ 100 ml .....       | 79 |
| Tabel 4.18 Pengujian Data Vitol-140 @ 100 gram.....         | 80 |
| Tabel 4.19 Tabel MSE metode KNN dan SES .....               | 80 |