

## DAFTAR ISI

|   |             |
|---|-------------|
| <b>HALAMAN JUDUL .....</b>                          | <b>i</b>    |
| <b>HALAMAN PENGESAHAN PEMBIMBING.....</b>           | <b>ii</b>   |
| <b>HALAMAN PENGESAHAN PENGUJI .....</b>             | <b>iii</b>  |
| <b>SURAT PERNYATAAN KARYA ASLI TUGAS AKHIR.....</b> | <b>iv</b>   |
| <b>SURAT PERNYATAAN BEBAS PLAGIAT.....</b>          | <b>v</b>    |
| <b>HALAMAN PERSEMBAHAN .....</b>                    | <b>vi</b>   |
| <b>KATA PENGANTAR.....</b>                          | <b>vii</b>  |
| <b>ABSTRAK .....</b>                                | <b>viii</b> |
| <b>DAFTAR ISI.....</b>                              | <b>ix</b>   |
| <b>DAFTAR GAMBAR.....</b>                           | <b>xi</b>   |
| <b>DAFTAR TABEL .....</b>                           | <b>xii</b>  |
| <b>DAFTAR MODUL PROGRAM .....</b>                   | <b>xiii</b> |
| <br>  |             |
| <b>BAB I PENDAHULUAN.....</b>                       | <b>1</b>    |
| 1.1 Latar Belakang .....                            | 1           |
| 1.2 Rumusan Masalah.....                            | 2           |
| 1.3 Batasan Masalah .....                           | 2           |
| 1.4 Tujuan Penelitian .....                         | 3           |
| 1.5 Manfaat Penelitian .....                        | 3           |
| 1.6 Metodologi Pengembangan Sistem.....             | 3           |
| 1.7 Sistematika Penulisan .....                     | 4           |
| <br>  |             |
| <b>BAB II TINJAUAN PUSTAKA .....</b>                | <b>6</b>    |
| 2.1 Data Mining .....                               | 6           |
| 2.2 Peramalan.....                                  | 6           |
| 2.2.1 Triple Eksponential Smoothing Winter .....    | 6           |
| 2.2.2 Forecast Error.....                           | 8           |
| 2.3 Harga Komoditas Bahan Pangan .....              | 9           |
| 2.4 Data Base .....                                 | 10          |
| 2.5 HTML .....                                      | 11          |
| 2.6 PHP .....                                       | 11          |
| 2.7 Entity Relationship Diagram (ERD).....          | 12          |
| 2.8 Data Flow Diagram (DFD) .....                   | 14          |
| 2.9 Waterfall .....                                 | 15          |
| 2.10 Penelitian Terkait .....                       | 16          |
| <br>  |             |
| <b>BAB III ANALISIS DAN PERANCANGAN.....</b>        | <b>18</b>   |
| 3.1 Metodologi Pengembangan Sistem.....             | 18          |
| 3.2 Analisis Masalah.....                           | 18          |
| 3.3 Analisis Kebutuhan Sistem .....                 | 18          |
| 3.3.1. Kebutuhan Perangkat Keras.....               | 19          |
| 3.3.2. Kebutuhan Perangkat Lunak.....               | 19          |
| 3.4 Perancangan Sistem .....                        | 19          |
| 3.4.1. Perancangan Proses.....                      | 20          |
| 3.4.1.1. DFD Level 0 .....                          | 20          |
| 3.4.1.2. DFD Level 1 .....                          | 21          |
| 3.4.1.3. DFD Level 2 Proses 2 Pengolahan Data.....  | 22          |

|   |    |
|---|----|
| 3.4.1.4. DFD Level 2 Proses 3 Layanan Pimpinan .....                            | 24 |
| 3.4.2. Flowchar dan Arsitektur Sistem.....                                      | 25 |
| 3.4.2.1. Flowchar Peramalan Menggunakan Metode Triple Exponential Smoothing.... | 25 |
| 3.4.2.2. Perhitungan Peramalan Harga Bahan Pangan.....                          | 26 |
| 3.4.2.3. Arsitektur Sistem .....  | 30 |
| 3.4.3. Perancangan Basis Data.....  | 30 |
| 3.4.3.1. Entity Relationship Diagram (ERD).....                                 | 31 |
| 3.4.3.2. Perancangan Tabel.....   | 31 |
| 3.4.3.3. Relasi Antar Tabel (RAT).....  | 33 |
| 3.4.4. Perancangan User Interface .....   | 34 |

**BAB IV HASIL, PENGUJIAN DAN PEMBAHASAN..... 41**

|   |    |
|---|----|
| 4.1 Pembahasan Program.....                                       | 41 |
| 4.1.1. Halaman Login.....   | 41 |
| 4.1.2. Halaman Beranda Petugas .....                              | 42 |
| 4.1.3. Halaman Data Harga Komoditas Bahan Pangan .....            | 43 |
| 4.1.3.1. Halaman Input Data Harga Pangan.....                     | 44 |
| 4.1.3.2. Halaman Ubah Data Harga Pangan .....                     | 46 |
| 4.1.4. Halaman Grafik Harga Pangan .....                          | 47 |
| 4.1.5. Halaman Grafik Overlay.....                                | 49 |
| 4.1.6. Halaman Hitung Peramalan .....                             | 50 |
| 4.1.6.1. Halaman Proses Hitung Peramalan.....                     | 54 |
| 4.1.7. Halaman Hasil Peramalan.....                               | 55 |
| 4.1.7.1. Halaman Grafik Hasil Peramalan .....                     | 58 |
| 4.1.8. Halaman User.....  | 59 |
| 4.1.8.1. Halaman Tambah User .....                                | 60 |
| 4.1.8.2. Halaman Ubah User.....                                   | 61 |
| 4.2 Pengujian Sistem.....   | 62 |
| 4.2.1. Pengujian Alpha Testing.....                               | 62 |
| 4.3 Pembahasan Pengujian Metode .....                             | 65 |
| 4.3.1. Pengujian Peramalan Harga Bahan Pangan Beras.....          | 65 |
| 4.3.2. Pengujian Peramalan Harga Bahan Pangan Daging Ayam .....   | 67 |
| 4.3.3. Pengujian Peramalan Harga Bahan Pangan Daging Sapi .....   | 68 |
| 4.3.4. Pengujian Peramalan Harga Bahan Pangan Gula .....          | 69 |
| 4.3.5. Pengujian Peramalan Harga Bahan Pangan Telur .....         | 70 |
| 4.3.6. Pengujian Peramalan Harga Bahan Pangan Minyak Goreng ..... | 71 |

**BAB V PENUTUP..... 73**

|                      |    |
|----------------------|----|
| 5.1 Kesimpulan ..... | 73 |
| 5.2 Saran .....      | 73 |

**DAFTAR PUSTAKA..... xiv**

## DAFTAR GAMBAR

|  |    |
|--|----|
| Gambar 3.1 DFD Level 0.....  | 19 |
| Gambar 3.2 DFD Level 1.....  | 20 |
| Gambar 3.3 DFD Level 2 Proses 2 Pengolahan Data.....                           | 21 |
| Gambar 3.4 DFD Level 2 Proses 3 Layanan Pimpinan.....                          | 23 |
| Gambar 3.5 Flowchart Peramalan Metode Triple Exponential Smoothing Winter..... | 25 |
| Gambar 3.6 Arsitektur Sistem.....  | 26 |
| Gambar 3.7 Entity Relationship Diagram (ERD).....                              | 27 |
| Gambar 3.8 Relasi Antar Tabel.....   | 29 |
| Gambar 3.9 Halaman Login.....  | 30 |
| Gambar 3.10 Halaman Beranda Pimpinan.....                                      | 31 |
| Gambar 3.11 Halaman Data Harga Pangan.....                                     | 31 |
| Gambar 3.12 Halaman Grafik Harga Bahan Pangan.....                             | 32 |
| Gambar 3.13 Halaman Hasil Peramalan.....                                       | 33 |
| Gambar 3.14 Halaman Ganti Password.....  | 33 |
| Gambar 3.15 Halaman Beranda Petugas.....                                       | 34 |
| Gambar 3.16 Halaman Data Harga Pangan.....                                     | 34 |
| Gambar 3.17 Halaman Peramalan Harga Pangan.....                                | 32 |
| Gambar 3.18 Halaman Kelola User.....   | 36 |
| Gambar 4.1 Halaman Login.....  | 41 |
| Gambar 4.2 Halaman Beranda Petugas.....  | 43 |
| Gambar 4.3 Halaman Tabel Harga Pangan.....                                     | 43 |
| Gambar 4.4 Halaman Input Harga Pangan.....                                     | 45 |
| Gambar 4.5 Halaman Ubah Harga Pangan.....                                      | 46 |
| Gambar 4.6 Halaman Grafik Harga Pangan.....                                    | 48 |
| Gambar 4.7 Halaman Grafik Overlay.....   | 49 |
| Gambar 4.8 Halaman Hitung Peramalan.....                                       | 51 |
| Gambar 4.9 Halaman Proses Hitung Peramalan.....                                | 54 |
| Gambar 4.10 Halaman Proses Hitung Peramalan.....                               | 54 |
| Gambar 4.11 Halaman Hasil Peramalan.....                                       | 56 |
| Gambar 4.12 Halaman Grafik Peramalan.....                                      | 58 |
| Gambar 4.13 Halaman Kelola User.....   | 59 |
| Gambar 4.14 Halaman Tambah User.....   | 60 |
| Gambar 4.15 Halaman Ubah User.....   | 61 |
| Gambar 4.16 Grafik Perbandingan Hasil Peramalan Beras.....                     | 66 |
| Gambar 4.17 Grafik Perbandingan Hasil Peramalan Daging Ayam.....               | 67 |
| Gambar 4.18 Grafik Perbandingan Hasil Peramalan Daging Sapi.....               | 68 |
| Gambar 4.19 Grafik Perbandingan Hasil Peramalan Gula.....                      | 70 |
| Gambar 4.20 Grafik Perbandingan Hasil Peramalan Telur.....                     | 71 |
| Gambar 4.21 Grafik Perbandingan Hasil Peramalan Minyak Goreng.....             | 72 |

## DAFTAR TABEL

|  |    |
|--|----|
| Tabel 2.1 Tabel Simbol ERD.....  | 14 |
| Tabel 2.2 Tabel Simbol DFD.....  | 15 |
| Tabel 2.3 Tabel Daftar Penelitian Terkait.....                             | 16 |
| Tabel 2.4 Lanjutan Tabel Daftar Penelitian Terkait .....                   | 17 |
| Tabel 3.1 Tabel User.....  | 27 |
| Tabel 3.2 Tabel Harga Pangan.....  | 28 |
| Tabel 3.3 Tabel Hasil Peramalan .....                                      | 28 |
| Tabel 3.4 Lanjutan Tabel Hasil Peramalan.....                              | 29 |
| Tabel 3.5 Tabel Hasil Peramalan Harga Beras 2018 .....                     | 39 |
| Tabel 4.1 Tabel Penguji <i>Alpha Testing</i> .....                         | 62 |
| Tabel 4.2 Tabel Pengujian <i>Alpha Testing</i> Hak Akses Petugas .....     | 63 |
| Tabel 4.3 Tabel Pengujian <i>Alpha Testing</i> Hak Akses Pimpinan .....    | 64 |
| Tabel 4.4 Tabel Pengujian Peramalan Harga Bahan Pangan Beras.....          | 66 |
| Tabel 4.5 Tabel Pengujian Peramalan Harga Bahan Pangan Daging Ayam .....   | 67 |
| Tabel 4.6 Tabel Pengujian Peramalan Harga Bahan Pangan Daging Sapi.....    | 68 |
| Tabel 4.7 Tabel Pengujian Peramalan Harga Bahan Pangan Gula.....           | 69 |
| Tabel 4.8 Tabel Pengujian Peramalan Harga Bahan Pangan Telur .....         | 70 |
| Tabel 4.9 Tabel Pengujian Peramalan Harga Bahan Pangan Minyak Goreng ..... | 72 |

## DAFTAR MODUL PROGRAM

|   |    |
|---|----|
| Modul Program 4.1 <i>Source Code</i> Halaman Login.....                                 | 42 |
| Modul Program 4.2 <i>Source Code</i> Tabel Harga Pangan.....                            | 44 |
| Modul Program 4.3 <i>Source Code Case</i> Tambah data.....                              | 45 |
| Modul Program 4.4 <i>Source Code Case</i> Ubah Data .....                               | 46 |
| Modul Program 4.5 Lanjutan <i>Source Code Case</i> Ubah Data .....                      | 47 |
| Modul Program 4.6 <i>Source Code</i> Grafik Harga Pangan.....                           | 48 |
| Modul Program 4.7 <i>Source Code</i> Grafik <i>Overlay</i> .....                        | 49 |
| Modul Program 4.8 Lanjutan <i>Source Code</i> Grafik <i>Overlay</i> .....               | 50 |
| Modul Program 4.9 <i>Source Code Case</i> Hitung Peramalan.....                         | 51 |
| Modul Program 4.10 Lanjutan <i>Source Code Case</i> Hitung Peramalan .....              | 52 |
| Modul Program 4.11 Lanjutan <i>Source Code Case</i> Hitung Peramalan .....              | 53 |
| Modul Program 4.12 <i>Source Code</i> Proses Hitung Peramalan .....                     | 55 |
| Modul Program 4.13 <i>Source Code</i> Hasil Peramalan .....                             | 56 |
| Modul Program 4.14 <i>Source Code Case</i> Hapus Hasil Peramalan .....                  | 57 |
| Modul Program 4.15 <i>Source Code Case</i> Grafik Hasil Peramalan.....                  | 57 |
| Modul Program 4.16 <i>Source Code</i> Grafik Peramalan .....                            | 58 |
| Modul Program 4.17 <i>Source Code</i> Halaman Kelola <i>User</i> .....                  | 59 |
| Modul Program 4.18 <i>Source Code Case</i> Tambah <i>User</i> .....                     | 60 |
| Modul Program 4.19 <i>Source Code Case</i> Ubah dan <i>Case</i> Hapus <i>User</i> ..... | 61 |