

## DAFTAR ISI

<b>JUDUL LUAR.....</b>	<b>i</b>
<b>JUDUL DALAM .....</b>	<b>ii</b>
<b>LEMBAR PENGESAHAN TUGAS AKHIR .....</b>	<b>iii</b>
<b>LEMBAR PENGESAHAN PENGUJI SIDANG.....</b>	<b>iv</b>
<b>LEMBAR PERNYATAAN KEASLIAN.....</b>	<b>v</b>
<b>ABSTRAK.....</b>	<b>vi</b>
<b>KATA PENGANTAR.....</b>	<b>vii</b>
<b>DAFTAR ISI .....</b>	<b>ix</b>
<b>DAFTAR TABEL.....</b>	<b>xv</b>
<b>DAFTAR GAMBAR .....</b>	<b>xvii</b>
<b>DAFTAR LAMPIRAN .....</b>	<b>xx</b>
<b>BAB I PENDAHULUAN.....</b>	<b>1</b>
1.1 Latar Belakang .....	1
1.2 Identifikasi Masalah.....	3
1.3 Ruang Lingkup Masalah .....	3
1.4 Tujuan dan Manfaat Penelitian.....	3
1.5 Manfaat Penelitian.....	4
1.6 Tehnik Pengumpulan Data .....	4
1.7 Sistematika Penulisan .....	5
<b>BAB II LANDASAN TEORI .....</b>	<b>6</b>
2.1 Landasan Teori.....	6
2.1.1 Rancang Bangun Sistem .....	6
2.1.2 Karakteristik sistem .....	6
2.1.3 Teori Analisis .....	8
2.1.3.1 Analisis PIECES .....	8

2.1.3.2	<i>Analisis Cause and Effect</i> .....	10
2.1.4	Pengertian Billing Sistem .....	10
2.1.5	<i>Payment system</i> .....	11
2.1.6	Pengertian Virtual Account .....	13
2.1.7	<i>Object Oriented Programing (OOP)</i> .....	14
2.1.8	Konsep Dasar Programing .....	15
2.1.9	<i>Unfied Modeling Language (UML)</i> .....	19
2.1.9.1	<i>Class Diagram</i> .....	20
2.1.9.2	<i>Activity Diagram</i> .....	23
2.1.9.3	<i>Use Case Diagram</i> .....	24
2.1.9.4	<i>Sequence Diagram</i> .....	26
2.1.9.5	<i>State Machine Diagram</i> .....	27
2.1.9.6	<i>Communication Diagram</i> .....	28
2.1.9.7	<i>Componen Diagram</i> .....	28
2.1.9.8	<i>Deployment Diagram</i> .....	29
2.2	Kerangka Pemikiran .....	30
2.3	Metode Pengembangan Sistem .....	30
2.3.1	Pengertian <i>Extreme Programing</i> .....	30
2.3.2	Tujuan <i>Extreme Programing</i> .....	31
2.3.3	Nilai Dasar <i>Extreme Programing</i> .....	31
2.4	<i>Software Testing Fundamentals</i> .....	32
2.4.1	<i>Black-Box Testing</i> .....	32

**BAB III GAMBARAN UMUM .....** 34

3.1	Gambaran Umum Perusahaan .....	34
3.1.1	Sejarah Singkat .....	34
3.1.2	Visi dan Misi .....	35
3.1.3	Struktur Organisasi .....	35
3.1.3.1	Gambar Struktur Organisasi .....	35

3.1.3.2	Tugas dan Wewenang Struktur Organisasi	36
3.2	Proses Bisnis	45
3.2.1	<i>Activity Diagram</i>	45
3.2.2	<i>Use Case Diagram</i>	48
3.3	Analisis Masalah	49
3.3.1	<i>Analisis PIECES</i>	49
3.4	Masalah yang dihadapi	51
3.5	Solusi yang akan dilakukan	51
<b>BAB IV HASIL DAN PEMBAHASAN</b>		<b>52</b>
4.1	<i>Planning</i>	52
4.2	<i>Design System</i>	53
4.2.1	<i>Use Case Diagram</i>	54
4.2.2	<i>Acrivity Diagram</i>	56
4.2.2.1	<i>Activity Diagram</i> Proses Login	56
4.2.2.2	<i>Acitivity Diagram</i> Kelola Data Customer	57
4.2.2.3	<i>Activity Diagram</i> Kirim Billing	58
4.2.2.4	<i>Activity Diagram</i> Lihat Status Member	58
4.2.2.5	<i>Activity Diagram</i> Kelola Data Billing	59
4.2.2.6	<i>Activity Diagram</i> Approval Data	60
4.2.2.7	<i>Activity Diagram</i> Pembayaran	61
4.2.2.8	<i>Activity Diagram</i> Laporan	63
4.2.2.9	<i>Activity Diagram</i> User Management	63
4.2.3	<i>Class Diagram</i>	64
4.2.4	<i>Sequence Diagam</i>	66
4.2.4.1	<i>Sequence Diagram</i> Login	66
4.2.4.2	<i>Sequence Diagram</i> Kelola Data Customer.	67
4.2.4.3	<i>Sequence Diagram</i> Kirim Billing	68
4.2.4.4	<i>Sequence Diagram</i> Lihat Status Member...	69

4.2.4.5	<i>Sequence Diagram</i> Kelola data Billing .....	70
4.2.4.6	<i>Sequence Diagram</i> Approval .....	71
4.2.4.7	<i>Sequence Diagram</i> Pembayaran.....	72
4.2.4.8	<i>Sequence Diagram</i> Laporan.....	73
4.2.4.9	<i>Sequence Diagram</i> User Management .....	74
4.2.5	<i>Collaboration Diagram</i> .....	75
4.2.5.1	<i>Collaboration Diagram</i> Login .....	75
4.2.5.2	<i>Collaboration Diagram</i> Kelola Data Customer .....	75
4.2.5.3	<i>Collaboration Diagram</i> Kirim Billing .....	76
4.2.5.4	<i>Collaboration Diagram</i> Lihat status Member .....	77
4.2.5.5	<i>Collaboration Diagram</i> kelola data Billing	78
4.2.5.6	<i>Collaboration Diagram</i> Approval .....	79
4.2.5.7	<i>Collaboration Diagram</i> Pembayran .....	80
4.2.5.8	<i>Collaboration Diagram</i> Laporan.....	81
4.2.5.9	<i>Collaboration Diagram</i> User Management	82
4.2.6	<i>Statechart Diagram</i> .....	82
4.2.6.1	<i>Statechart Diagram</i> cetak billing .....	83
4.2.6.2	<i>Statechart Diagram</i> Pembayaran .....	83
4.2.7	<i>Componen Diagram</i> .....	84
4.2.8	<i>Deployment Diagram</i> .....	85
4.3	<i>Design Database</i> .....	86
4.4	<i>Design Interface</i> .....	91
4.4.1	Menu Navigasi.....	91
4.4.2	RancanganLayar .....	93
4.4.2.1	Rancangan Login .....	93
4.4.2.2	Rancangan Menu Utama .....	93
4.4.2.3	Rancangan Menu User .....	94

4.4.2.4	Rancangan Menu Navigasi .....	95
4.4.2.5	Rancangan Menu Navigasi User .....	95
4.4.2.6	Rancangan Menu Unit.....	96
4.4.2.7	Rancangan Menu Status .....	97
4.4.2.8	Rancangan Menu Paket .....	97
4.4.2.9	Rancangan Menu Customer .....	98
4.4.2.10	Rancangan Menu Member .....	98
4.4.2.11	Rancangan Menu Approval .....	99
4.4.2.12	Rancangan Menu Data Billing .....	100
4.4.2.13	Rancangan Menu Pembayaran .....	100
4.4.2.14	Rancangan Menu Laporan Pembayaran ....	101
4.4.2.15	Rancangan Menu Log Email .....	101
4.5	Coding .....	102
4.6	Testing .....	102
4.6.1	Rencana Pengujian.....	103
4.6.2	Hasil Pengujian.....	105
4.7	Implementasi.....	108
4.7.1	Implementasi Perangkat Lunak.....	109
4.7.2	Implementasi Perangkat Keras .....	109
4.8	Analisis Sistem .....	109
4.8.1	<i>Analisis PIECES</i> .....	109
4.8.2	<i>Analisis Cause and Effect</i> .....	112
<b>BAB V SIMPULAN DAN SARAN .....</b>		<b>115</b>
5.1	Simpulan.....	115
5.2	Saran .....	115
5.3	Keterbatasan Skripsi .....	116

<b>DAFTAR PUSTAKA.....</b>	<b>117</b>
<b>DAFTAR RIWAYAT HIDUP .....</b>	<b>119</b>

## DAFTAR TABEL

Tabel 2.1	Penjelasan Simbol <i>Visibility</i> .....	20
Tabel 2.2	Penjelasan Simbol <i>Multiplicity</i> .....	21
Tabel 2.3	Penjelasan Simbol <i>Relationship</i> .....	21
Tabel 2.4	Penjelasan Simbol <i>Activity Diagram</i> .....	23
Tabel 2.5	Penjelasan Simbol <i>Use Case Diagram</i> .....	25
Tabel 2.6	Penjelasan Simbol <i>Sequence Diagram</i> .....	26
Tabel 3.1	Definisi <i>Actor</i> dan Deskripsi .....	48
Tabel 3.2	Definisi <i>Use Case</i> dan Deskripsi .....	49
Tabel 3.3	Kerangka PIECES .....	50
Tabel 4.1	Keterangan <i>Use Case Diagram</i> .....	55
Tabel 4.2	Kamus Data tabel <i>bill_user</i> .....	86
Tabel 4.3	Kamus Data tabel <i>bill_menu_user</i> .....	87
Tabel 4.4	Kamus Data tabel <i>bill_menu</i> .....	87
Tabel 4.5	Kamus Data tabel <i>bill_unit</i> .....	87
Tabel 4.6	Kamus Data tabel <i>bill_status</i> .....	88
Tabel 4.7	Kamus Data tabel <i>bill_paket</i> .....	88
Tabel 4.8	Kamus Data tabel <i>bill_customer</i> .....	88
Tabel 4.9	Kamus Data tabel <i>bill_member</i> .....	89
Tabel 4.10	Kamus Data tabel <i>bill_billing</i> .....	89
Tabel 4.11	Kamus Data tabel <i>bill_pay</i> .....	90
Tabel 4.12	Kamus Data tabel <i>log_email</i> .....	91
Tabel 4.13	Rencana Pengujian Sistem .....	103
Tabel 4.14	Pengujian Level <i>Customer Service</i> .....	105
Tabel 4.15	Pengujian Level <i>Finance</i> .....	106
Tabel 4.16	Pengujian level <i>Manager</i> .....	108
Tabel 4.17	Kerangka PIECES .....	111
Tabel 4.18	Biaya Finansial dan Non Finansial .....	113

Table 4.19 Analysis *Cause and Effect* ..... 114

## DAFTAR GAMBAR

Gambar 2.1	Skema <i>Virtual Account</i> .....	13
Gambar 2.2	Contoh Penjelasan nomor <i>Virtual Account</i> .....	14
Gambar 2.3	Contoh <i>Class Diagram</i> .....	22
Gambar 2.4	Contoh <i>Activity Diagram</i> .....	24
Gambar 2.5	Contoh <i>Use Case Diagram</i> .....	25
Gambar 2.6	Contoh <i>Sequence Diagram</i> .....	27
Gambar 2.7	Contoh <i>State Machine Diagram</i> .....	27
Gambar 2.8	Contoh <i>Communication Diagram</i> .....	28
Gambar 2.9	Conoth <i>Componen Diagram</i> .....	29
Gambar 2.10	Contoh <i>Deployment Diagram</i> .....	29
Gambar 2.11	Kerangka Pemikiran .....	30
Gambar 2.12	Tahapan <i>Extreme Programing</i> .....	31
Gambar 3.1	Struktur Organisasi PT. DIP .....	35
Gambar 3.2	Acitivity Sistem berjalan PT. Dian Ikrar Perkasa .....	47
Gambar 3.3	<i>Use Case</i> Sistem berjalan PT. Dian Ikrar Perkasa .....	48
Gambar 4.1	<i>Use Case Diagram</i> billing system .....	54
Gambar 4.2	<i>Activity Diagram</i> proses login .....	56
Gambar 4.3	<i>Activity Diagram</i> kelola Data <i>Customer</i> .....	57
Gambar 4.4	<i>Activity Diagram</i> kirim billing .....	58
Gambar 4.5	<i>Activity Dlagam</i> Lihat status member .....	59
Gambar 4.6	<i>Activity Diagram</i> Kelola Data Billing .....	60
Gambar 4.7	<i>Activity Diagram</i> Approval Data .....	61
Gambar 4.8	<i>Activity Diagram</i> pembayaran .....	62
Gambar 4.9	<i>Activity Diagram Laporan</i> .....	63
Gambar 4.10	<i>Activity Diagram</i> User Management .....	64
Gambar 4.11	<i>Class Diagram</i> billing System .....	65
Gambar 4.12	<i>Sequence Diagram</i> Login .....	65

Gambar 4.13 <i>Sequence Diagram</i> Kelola data Customer .....	67
Gambar 4.14 <i>Sequence Diagram</i> kirim billing .....	68
Gambar 4.15 <i>Sequence Diagram</i> status member .....	69
Gambar 4.16 <i>Sequence Diagram</i> kelola data billing .....	70
Gambar 4.17 <i>Sequence Diagram Approval</i> .....	71
Gambar 4.18 <i>Sequence Diagram</i> pembayaran .....	72
Gambar 4.19 <i>Sequence Diagram</i> Laporan .....	73
Gambar 4.20 <i>Sequence Diagram</i> User Management .....	74
Gambar 4.21 <i>Collaboration Diagram</i> Login .....	75
Gambar 4.22 <i>Collaboration Diagram</i> keloa data Customer .....	76
Gambar 4.23 <i>Collaboration Diagram</i> kirim billing .....	77
Gambar 4.24 <i>Collaboration Diagram</i> lihat status Member .....	78
Gambar 4.25 <i>Collaboration Diagram</i> kelola Data Billing .....	79
Gambar 4.26 <i>Collaboration Diagram Approval</i> .....	80
Gambar 4.27 <i>Collaboration Diagram</i> Pembayaran .....	81
Gambar 4.28 <i>Collaboration Diagram</i> Laporan .....	81
Gambar 4.29 <i>Collaboration Diagram</i> User Management .....	82
Gambar 4.30 <i>Statechart Diagram</i> cetak billing .....	83
Gambar 4.31 <i>Statechart Diagram</i> Pembayaran .....	84
Gambar 4.32 <i>Componen Diagram</i> billing system .....	85
Gambar 4.33 <i>Deployment Diagram</i> billing system .....	86
Gambar 4.34 Menu Navigasi .....	92
Gambar 4.35 Perancangan Interface Halaman Menu Login .....	93
Gambar 4.36 Perancangan Interface Halaman Menu Utama.....	94
Gambar 4.37 Perancangan Interface Halaman Menu User .....	94
Gambar 4.38 Perancangan Interfase Halaman Menu Navigasi .....	95
Gambar 4.39 Perancangan Interface Halaman Menu Navigasi User .....	96
Gambar 4.40 Perancangan Interface Halaman Menu Unit .....	96
Gambar 4.41 Perancangan Interface Halaman Menu log Status .....	97

Gambar 4.42 Perancangan Interface Halaman Menu Paker .....	97
Gambar 4.43 Perancangan Interface Halaman Menu Customer .....	98
Gambar 4.44 Perancangan Interface Halaman Menu Member .....	99
Gambar 4.45 Perancangan Interface Halaman Menu Approval .....	99
Gambar 4.46 Perancangan Interface Halaman Menu Billing .....	100
Gambar 4.47 Perancangan Interface Halaman Menu Pembayaran .....	100
Gambar 4.48 Perancangan Interface Halaman Menu Laporan .....	101
Gambar 4.49 Perancangan Interface Halaman Menu Log Email .....	101

## DAFTAR LAMPIRAN

Lampiran A-1 Contoh Listing Login .....	L-1
Lampiran A-2 Contoh Listing kelas .....	L-2
Lampiran B-1 Halaman Login .....	L-8
Lampiran B-2 Halaman Utama .....	L-8
Lampiran B-3 Contoh Menu Halaman Customer .....	L-9
Lampiran B-4 Contoh Menu Halaman Approval .....	L-9
Lampiran B-5 Contoh Menu Halaman Log Email .....	L-10
Lampiran B-6 Contoh Menu Master Halaman paket .....	L-10