

DAFTAR ISI

HALAMAN JUDUL.....	i
<i>(SMART IRRIGATION SYSTEM BASED ON IoT WITH SOIL MOISTURE DETECTOR)</i>	i
LEMBAR PENGESAHAN	ii
LEMBAR PERNYATAAN ORISINALITAS	iii
ABSTRAK	iv
<i>ABSTRACT</i>	v
KATA PENGANTAR.....	vi
UCAPAN TERIMA KASIH.....	vii
DAFTAR ISI.....	ix
DAFTAR GAMBAR	xii
DAFTAR TABEL	xiii
DAFTAR SINGKATAN.....	xiv
BAB I PENDAHULUAN.....	1
<i>1.1 Latar Belakang Masalah</i>	1
<i>1.2 Rumusan Masalah</i>	2
<i>1.3 Tujuan dan Manfaat</i>	2
<i>1.4 Batasan Masalah</i>	3
<i>1.5 Metode Penelitian</i>	3
<i>1.6 Sistematika Penulisan</i>	4
BAB II KONSEP DASAR.....	5
<i>2.1 Internet of Things (IoT)</i>	5
2.1.1 <i>Gateway</i>	5
2.1.2 <i>Cloud Gateway</i>	6
2.1.3 <i>Streaming data processor</i>	6
2.1.4 <i>Data base</i>	6
2.1.5 <i>Big data warehouse</i>	6

2.1.6 <i>Data analytics</i>	6
2.1.7 <i>User applications</i>	6
2.2 <i>Irigasi</i>	6
2.2.1. <i>Irigasi permukaan (surface irrigation system)</i>	7
2.2.2. <i>Irigasi dengan pancaran (sprinkle irrigation)</i>	7
2.2.3. <i>Sistem irigasi bawah tanah (sub surface irrigation system)</i>	7
2.2.4. <i>Irigasi tetes (Drip Irrigation)</i>	7
2.3 <i>Cabai</i>	8
2.3.1 <i>Kelembaban Udara</i>	8
2.3.2 <i>Kelembaban Tanah</i>	8
2.3.3 <i>Intensitas cahaya</i>	8
2.4 <i>Perangkat Keras</i>	9
2.4.1 <i>ESP-32</i>	9
2.4.2 <i>Sensor DHT 22</i>	9
2.4.3 <i>Robotdyn LDR Module</i>	10
2.4.5 <i>Sensor Kelembaban Tanah</i>	10
2.4.6 <i>Water Pump</i>	11
2.4.7 <i>Relay</i>	11
2.4.8 <i>Ultra Sonic HC-SR 04</i>	12
2.5 <i>Aplikasi dan Software</i>	12
2.5.1 <i>Arduino IDE</i>	13
2.5.2 <i>Firebase</i>	13
2.5.3 <i>Wireshark</i>	14
2.6 <i>Parameter Pengujian QoS</i>	14
2.6.1 <i>Delay</i>	14
2.5.2 <i>Throughput</i>	15
BAB III MODEL SISTEM DAN PERANCANGAN	16
3.1 <i>Desain Sistem</i>	16
3.2 <i>Flowchart Sistem</i>	17
3.3 <i>Daftar Perangkat</i>	18
3.3.1 <i>Komponen Perangkat Keras</i>	18
3.3.2 <i>Komponen Perangkat Lunak</i>	18
3.4 <i>Design Perangkat Keras</i>	19
BAB IV HASIL DAN ANALISIS	21
4.1 <i>Kalibrasi Sensor Kelembaban</i>	21
4.2 <i>Kalibrasi Sensor DHT-22</i>	22
4.3 <i>Kalibrasi Sensor ultrasonic</i>	24
4.4 <i>Kalibrasi Robotdyn LDR module</i>	25
4.5 <i>Pengujian Perangkat Keras</i>	26
4.6 <i>Pengujian hasil Monitoring</i>	27

<i>4.7 Pengujian QoS (Quality of Service)</i>	30
4.7.1 <i>Pengujian Delay</i>	30
4.7.2 Pengujian Throughput	31
BAB V KESIMPULAN DAN SARAN	31
5.1 <i>Kesimpulan</i>	31
5.2 <i>Saran</i>	31
DAFTAR PUSTAKA	32