Transmission Line Multiple Fault Detection and Data Collection of Level of Fault using Internet of Things and Analysis of System

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Abstract—In current scenario peoples are suffering from very big issue i.e. power failure and they don't know exact location of fault and spot due to this they waste their time to find out the fault. They call area linemen or ask about the fault to the area manager but authorized person is unable to give the exact reason behind this with the help of our model it is possible to give message to authorized person like chief area engineer and linemen of particular area because their mobile number or devices are connected with our network at the same time message also deliver to the customers of particular area or location as this all members related to power failure notice the exact spot and exact point. With the help of our model they can save their time and labors.

Keywords— Internet of things (IoT), Fault detection, Relay, Fault manipulation, Server, Feedback, NODE MCV, ESP8266, ESP32

I. INTRODUCTION

Today we are living in age of science. Science invented many devices for our life. Every person wants luxuries life for this he or she purchase all devices. All of we know that all the devices are useless without electricity. We cannot live without electricity. Day after day the demand of electricity is increasing. Without electric supply we are facing many problems. Day after day we are facing problem like insufficient power supply, low power supply or break down in particular area. Many times, all the city or all village or particular area goes in dark.

To solve this problem, we find out solution which is totally based on IoT(Internet of Things). All of we know that there are so many devices which have in build bluetooth and Wi-Fi. From this device we can find exact location, spot and analysis of data. For this we use ESP32, Adaptor, Display, Resistor, Switches, Relay Driver, Relay.

II. METHODOLOGY

We are going to implement a system for detect the exact location of fault, exact spot and analysis of data by IoT. According to our literature survey we found the big issue which is nowadays peoples are suffering from load shadings and people don't know what is the fault and exact location of fault. Because of this only overall area line is off but exactly fault in not in all area it is only it is only up to particular spot. Nowadays MAHAVITRAN after power failure gives the message to the customer i.e. in your area due Fault. There are so many large cables and very huge wires are used for the power supply but in our methodology, there is are no cables and wires are use in our implementation i.e. our model is totally wireless and in this we use Esp 32 which have in build bluetooth and Wi-Fi and we gives to customer in our project exact location of fault and exact detection time through text and overall information gives to control room.

First we give power supply through t 12V adaptor then this power supply goes to each and every components. On display it is initialize the input output ports from this input output port. Through this ports we can detect it is short circuit or not if it is short circuit then it will be display fault location distance and data analysis will be done and it is not then it will be no display and no data analysis will be done. And also if it is open circuit then also it will display and data analysis will be done. When red blue and yellow lines are short with each other then it will be a short circuit, and if one line of this three lines is short with ground then it will be open circuit.

Fig No: 1.1 Transmission lines and Neutral line Flow diagram given below:

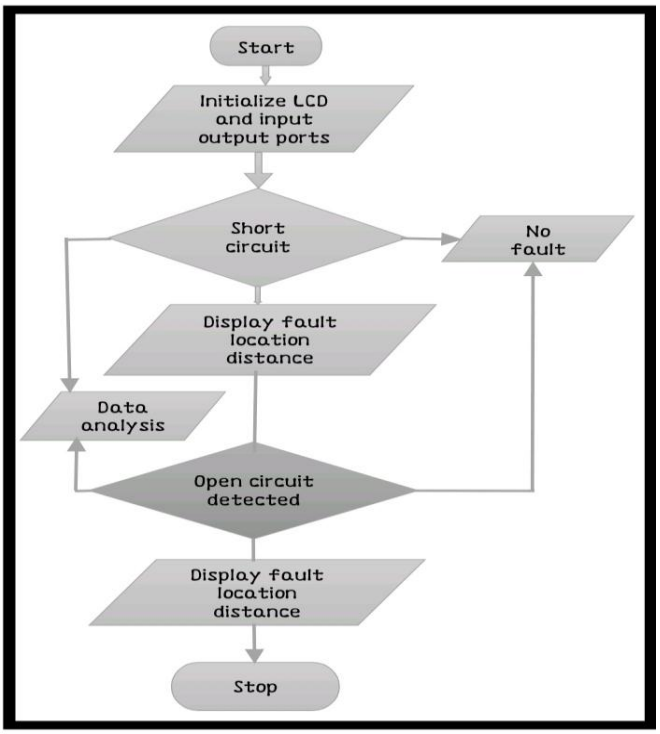


Fig No:-1.2 New Model based on IoT

Algorithm:

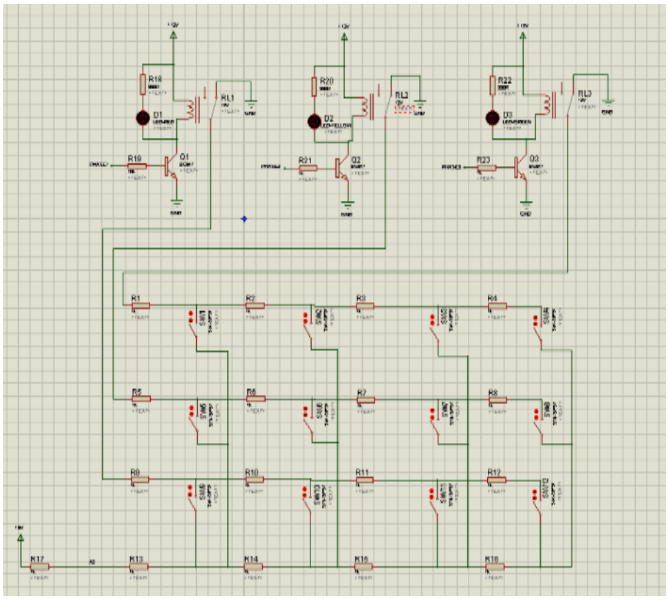


Fig No:1.2 Flow chart of our system.

STEP1: Start

STEP2:Input/Output Port

STEP3:Input port goes to the A0 Port

and output goes to the phase 1, phase 2, phase

STEP4:LCD outputs are goes t

sesPB4,PB3,PD5,PD4,PD3,PD2

STEP5:Short circuit detection/Open cA0 pin of Arduino

Algorithm:-

STEP1: Start

STEP2:Input/Output Port

STEP3:Input port goes to the A0 Port

and output goes to the phase 1, phase 2, phase in phase1 port is PB1, in phase 2 port is PB0, in phase PD7

STEP4: LCD outputs are goes to the phases i.e. PB4, PB3, PD5, PD4, PD3, PD2

STEP5:Short circuit detection/Open circuit detection

If(Detected)

Then resistance of wire changes which will be measure by A0 pin of Arduino.

Then detected short circuit will be display on LCD

Then according to the detection data analysis and recovery will be done

STEP6:End

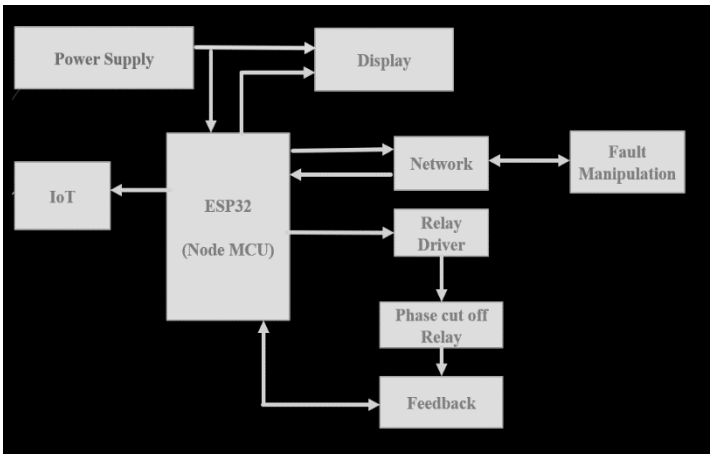


Fig No:1.3 Block diagram of our system

In above block diagram through power supply power goes to each and every component.This model is totally based on Iot and program for data analysis and feedback as well.After we making program this program store in hardware i.e network,relay,transistors,resistors etc.

II (A). POWER SUPPLY

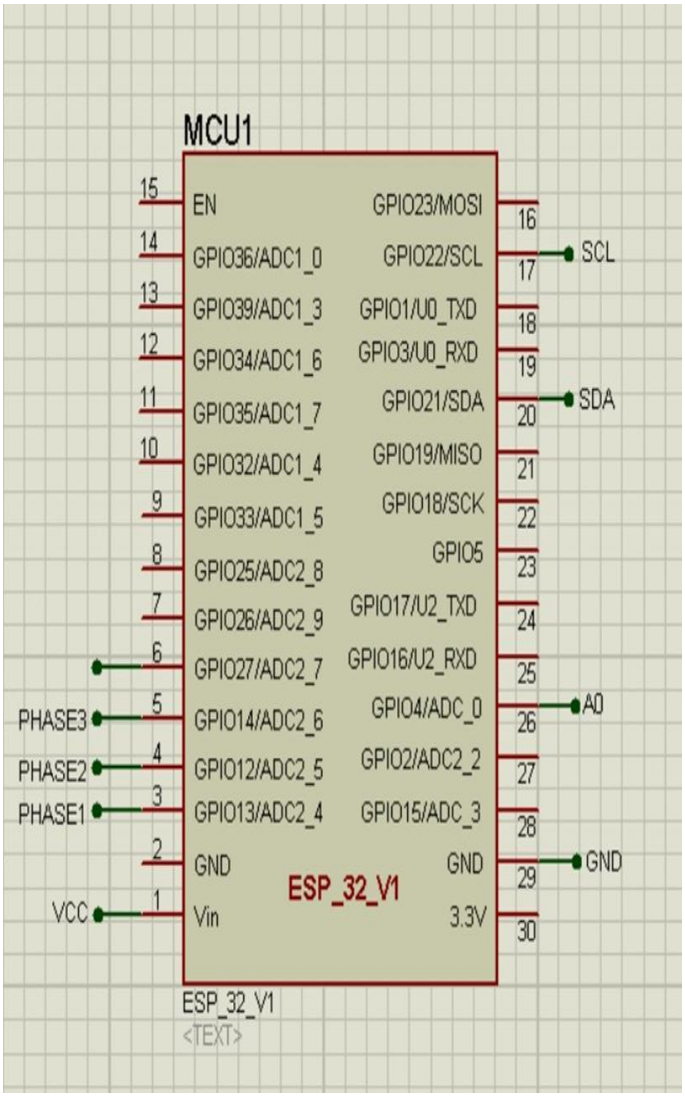
Power supply which supplies the electricity in transmission line and its converts alternate current into direct current so its easily gives the power to the transmission line,relays and oyher component of our new ,model based on IoT which is gives in fig no:1.2.Power supply also distributes the power Dc voltage to each and every components of our IoT based model.

II (B). DISPLAY

In display we use LCD which is 16*2 i.e 16 bits and 2 line.On this LCD it display fault location distance and data analysis will be done.

II (C). EsP 32

It has inbuild Wi-Fi and Bluetooth and this a very big advantage for our project to make system wireless and large cables will not be use. And ports are connected to the phases so it is very compatible.



II (D). NETWORKS AND FAULT MANIPULATION

For networks we use resistors and fault deection so we can easily detect exact spot and location.In fault manipulation we use the slide switches for manipulating the fault.

II (E). RELAY AND RELAY DRIVER

We uses 12V relay and it controls one electrical circuit by opening bad closing contanct with any another electrical circuit.And we use relay driver BCS47 transistors.

II(F) . DATA ANLAYSIS AND FEED BACK

For data analysis and feedback we stores the program in hardware due to this we can receive each and every function information in our system and it is very major part of our project.And also we feedback also and it will display on LCD.Data analysis will be done using program.When we analysis the data buy aur program we can get easily solution of fault that's why we require less time for detection fault and restore it easily and less time require.

III . CONCLUSION

The purpose system saves time and energy of linemen.
And control room also gets overall information, data analysis, solution of fault. Also, customer gets information through messages i.e. spot of fault, location fault and also recovering time from our propose system we save the hard work, time and labors. Also, customer load due to power failure is overcome because they know exact spot and location and time for recover this problem.

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