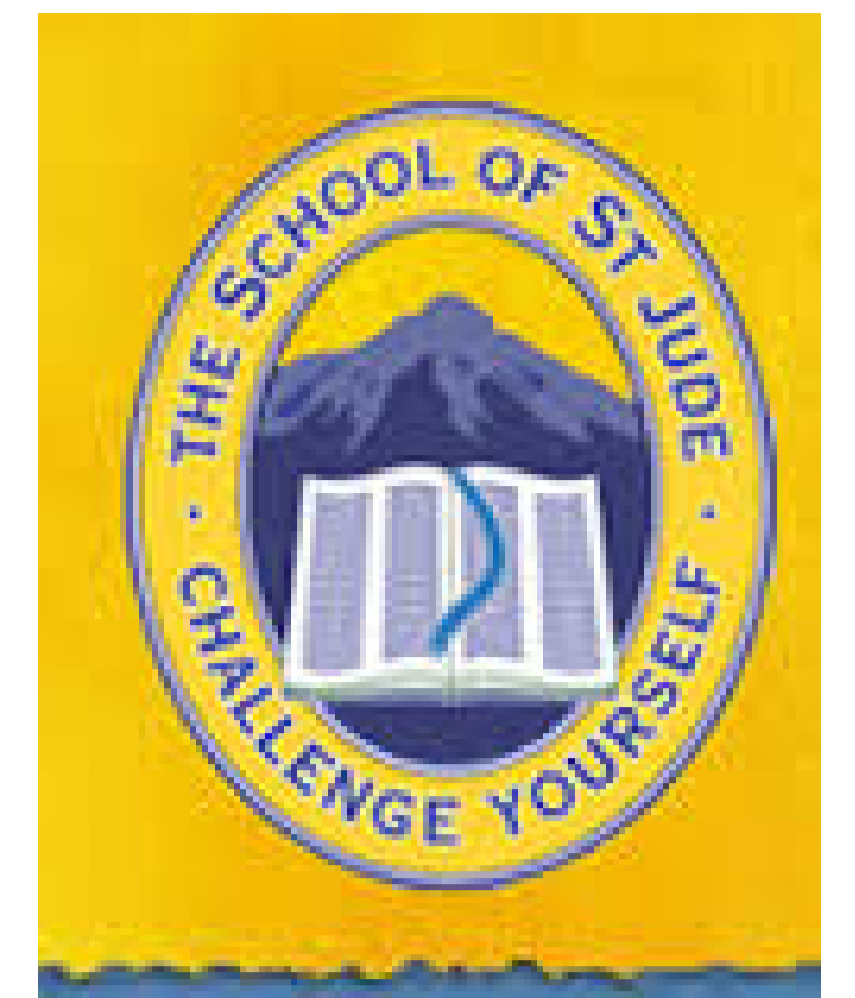




Automatic House Control System

105. St Jude

Venance Msechu and Martin Oisso



Introduction: We aimed at improving peoples security using computerized devices; also we saw the need of reducing unnecessary cost such as electrical bills, avoiding loss of data due to fluctuating Tanesco power. We used both programming and electronics to solve the problems facing our societies. We used backup devices such as UPS boards and batteries to avoid power fluctuation. We used the secured gate. We also made the lights and fans to operate automatically so as to reduce unnecessary electrical bills.

Installations were made to one of the house and we managed to solve the power fluctuation problems and we were also able to reduce the electrical bill whereby we made the lights and fans to operate automatically and we introduced a feature which could allow the house owner to lock the house sockets so as to avoid misusing of power and unauthorized access to the house system.

Method:

We used the electronics and programming skills to bring about our project so as to solve problem and develop technology. We began with power supply which plays a role of distributing power in different parts of the system. Shown aside is the block diagram.

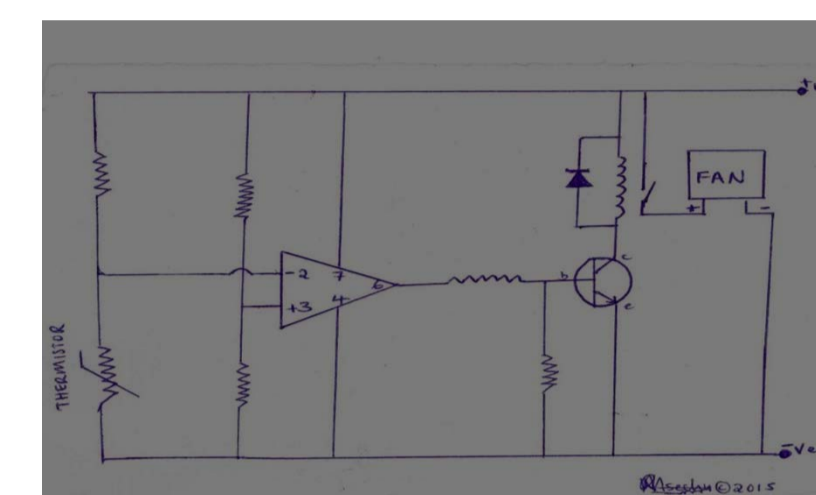
The tube light has been used to demonstrate both security and the light installed inside the house. The automatic light circuit in really application can be used for the outside light of the house and the sms (short message services) switching can be used for the inside light of the house.

RASPBERRY PI

Is a programmable device which uses different programming language one of them being python so as to perform functions in response to the commands It has pins named as GPIO pins which can be used as Input or Output pins.

It gives an output of 3.3v and also receives 3.3v logic as an input voltage.

It has acted as a main brain in our system as far as it gives instructions in response to the commands sent by the user through sms.

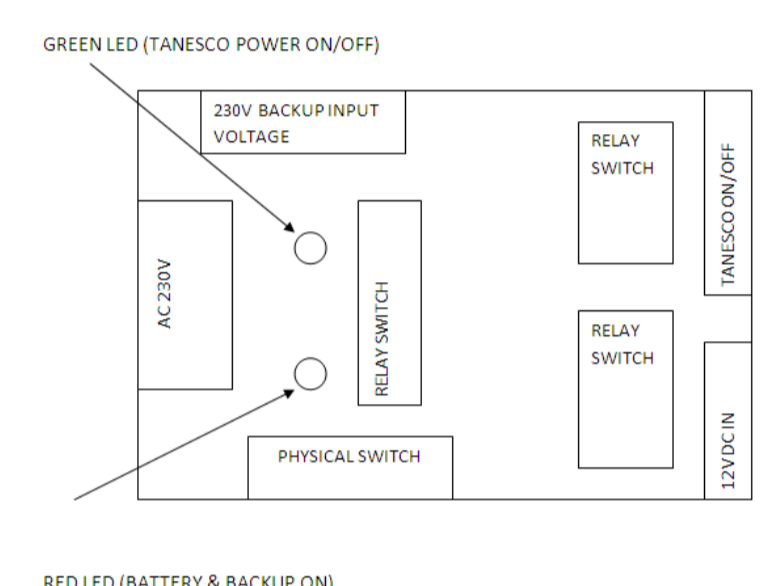
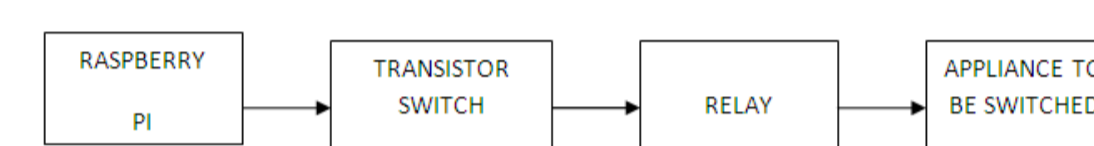


LOGIC SWITCHING

Is a circuit which receives a logic voltage from a raspberry pi so as to switch the transistor on or off.

When the transistor is switched on, it powers the relay switch for specified appliance switching.

BLOCK DIAGRAM



Results:

SMS COMMUNICATION WHEN THE GPIO PINS ACT AS OUTPUT PINS

When the user sends an SMS (Short Message Service), it is then received by the SIM CARD via the Modem then the modem sends that message as a command to a raspberry pi for processing, the raspberry processes the command and gives an output of 3.3v logic which switches the transistor into a high state (1), the transistor powers the relay switch and finally the appliance is switched on and the user receives an SMS that something has been switched on.

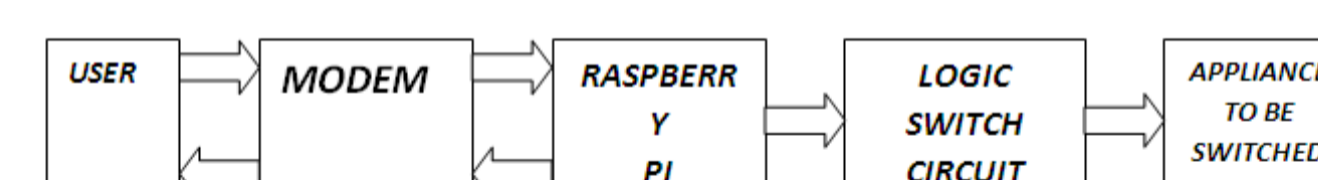
NOTE:-The relay and transistor works together forming the logic switching circuit.

SMS COMMUNICATION WHEN THE GPIO PINS ACT AS INPUT PINS

As used in our in our Automatic House Control System, when the door is opened the state of the GPIO pin is high because the 3.3v is not grounded and when the door is closed the GPIO pin state is low because the switch is connected and hence connected to ground. The raspberry pi checks the initial state the sends the message to the user incase of any opening and closing of the door and makes the user aware of anything going on so as he/she can reason and take appropriate measures.



SMS COMMUNICATION BLOCK DIAGRAM



Conclusions

We were able to solve most of the people's problems which were listed at the beginning of the report by which these people's problems acted as a guide line for as to resolve and come up with more ideas of our project .

We had a lot of things to do but ¾ of our project succeeded, this is because of different challenges which we faced such as Destruction Of Materials. E.g. Raspberry Pi.

We also have a passion of helping our societies scientifically so as to reduce unnecessary costs, to save time and creating employment to the unemployed people. We have a dream that one day Tanzania will have the best Technology than this current period and hope that we are the ones to make those changes.

References

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Acknowledgments

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