News Flash

# Device for measurement of vitality

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## Abstract

It is an electrical circuit which depends on the electrical messages from brain to the nerve endings so it's applicable to measure the life signs and vitality of the patient rapidly and accurately, it can save the life of victims who are in coma.

So, the device can determine whether the patient is alive or not qualitatively, it is not expensive which costs only 1 $ only excluding the price of power supply, it is mobilized and can be taken everywhere, and doesn't need expert to deal with it.

It is very beneficial to save the lives of hypoglycemic patients who may be buried alive and at the same time can be used to measure the vitality of victims of car accidents, earthquakes and floods etc. which allows the ambulance to take only alive victims who need an urgent rescue rather than taking victims randomly without distinction them accurately if they were alive or not.

***Key words:****hypoglycemia, measurement of vitality*

## Introduction

Some cases of hypoglycemia and stiff muscles are thought by some doctors as if this patient is dead which lead to bury him alive and although there are many devices are used to avoid this event but they are very expensive, immobilized and used only for inpatients and can't be carried into the location of the accident or can't be put in home in addition, they need experience to deal with those sophisticated devices.

Fig.1 some examples of dangerous accidents which need rapid intervention

This life saving simple device is capable of determination the vitality of the victim or patient qualitatively which is temporary very sufficient to take a medical decision to save his life, it is very cheap and can be used everywhere because it is not complicated and mobilized as well as its simplicity makes it easy to be used as it doesn't need any technical or medical experience to use it.

This circuit is not dangerous nor harmful for human body because the voltage is too low to shock human body.

**Materials and methods**

As shown in figure.2 which illustrates the design of this circuit, it's not invasive, it is enough to put the finger of the suspected patient and if the patient is alive, the circuit will be lighted up and if the patient or victim is dead, the circuit will not light up.

To implement this circuit we will need: test board-Transistor-led-Resistance from 330 to 390 ohm-wires-sensor-power supply

1-Take 2 wires of power supply and conduct them into positive and negative pole of the board

2-Take another wire and conduct it with +ve led and +ve pole

3-Put transistor in the same way with the board to avoid explosion of the board

4-Take wire and conduct the collector of transistor and –ve board

5-conduct left side of resistance with +ve led and right side with emitter of transistor

6-conduct sensor

7-Take another wire conducted with the base of transistor and conduct the free end with the finger

N.B. For turning on power supply (VCC) conduct green end with the black end (4 with 4)

If you used transistor 57 note that emitter on the left side and collector in the right side while in case of transistor 47 note that emitter on the right side and collector on the left side, certainly base is on the middle side of both types of transistors

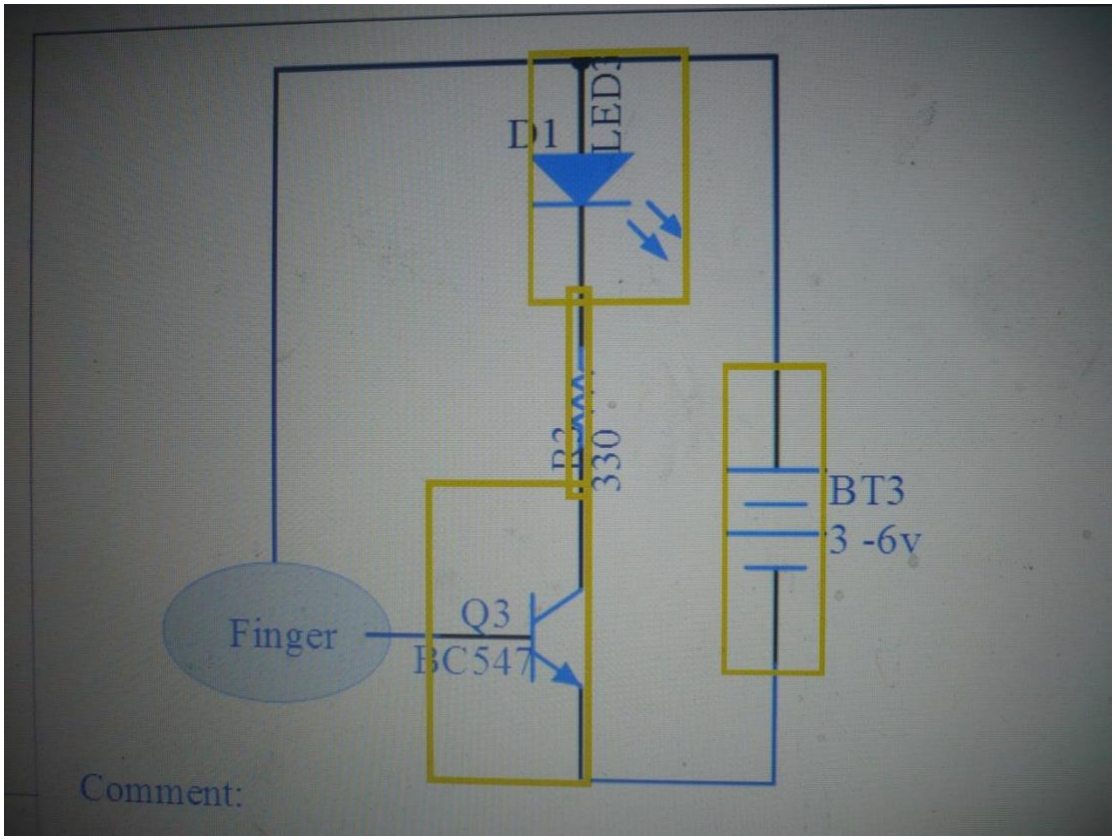


Fig. 2 the design of the circuit, presents battery with voltage 3 to 6 volts, LED, resistance 330 kilo Ohm, transistor type BC 547 and finger

**Results**

As shown below the LED is illuminating due to touching the finger which means that the person touching it is alive so the circuit has been closed and vice versa in the case of a dead or not a vital organ the circuit will not work, this happened because of the connection between the electricity in the live body and the electricity of the circuit.

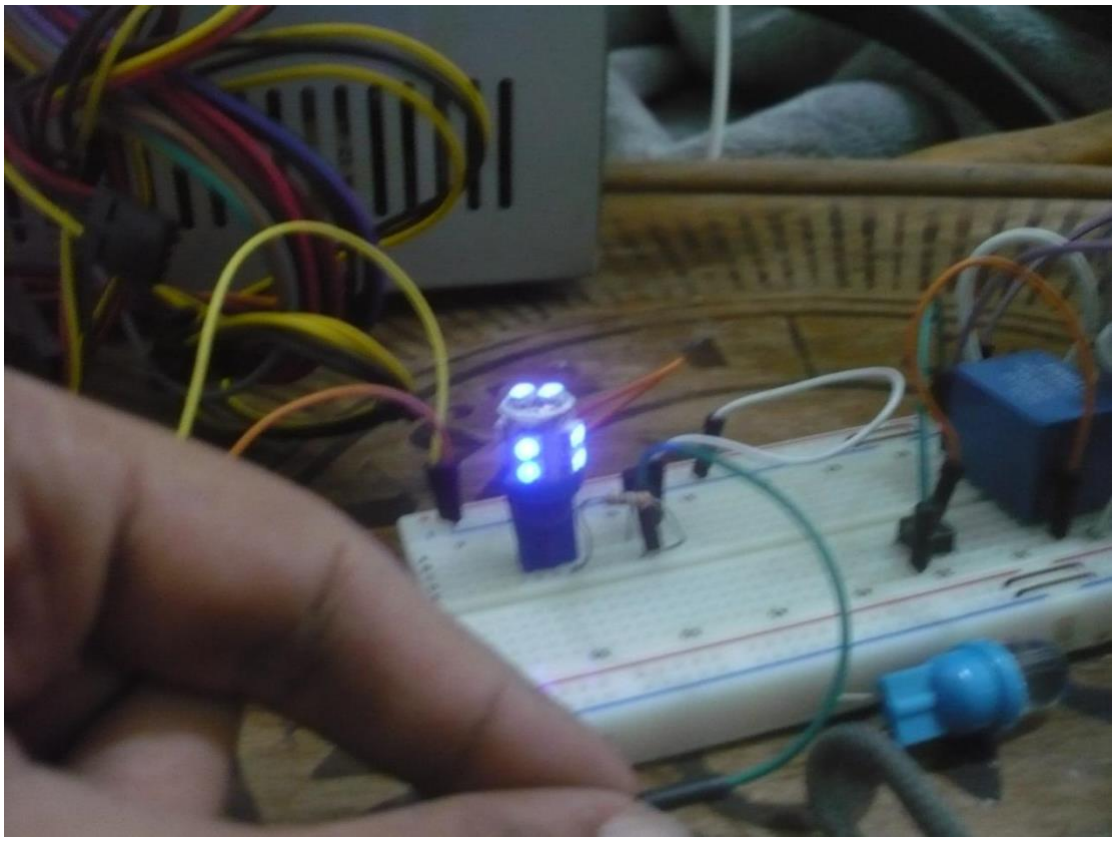

Fig.3. illumination of the LED due to contact with alive finger touches it

**Discussion**

The laws I used for these circuits are:

Ie=Ic+Ib

Alpha€=Ic/Ie

Ic=alpha€*Ie

I(b)=Ie-Ic

I(b)=Ie-AlphA€*Ie=Ie(1-Alpha€)

Be=Ic/Ib when Ib=0  Be=infinity  Alpha€=1

So, Be=Alpha€*Ie/Ie(1-Alpha€)=Alpha€/1-Alpha€

Power supply should be from 3 to 6 volt

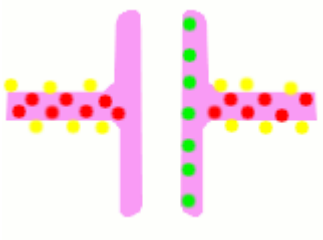

Figure.4 action potential of sodium/ potassium pump

In figure.2 it is observed that Nervous runny or nerve impulse is the messages carried by the nerves of the organs of sense (receivers) to the central nervous system and the central device to the organs of the response .. and made the transfer process, either by electrical or by chemical reactions between nerves, nervous runny estimated speed of the nerves to 120 meters per second, equivalent to 432 km per hour.
A nerve impulse is the way nerve cells (neurons) communicate with one another. Nerve impulses are mostly electrical signals along the dendrites to produce a nerve impulse or action potential.

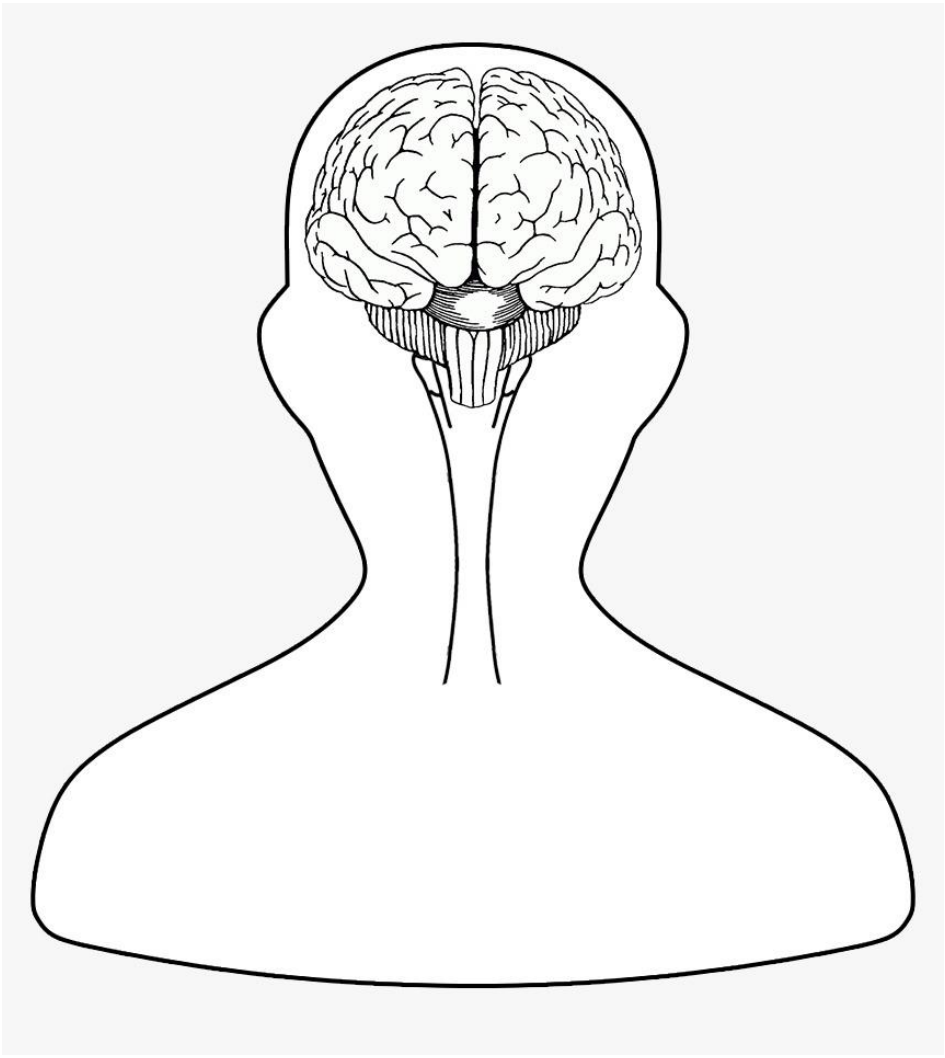

Figure.5. Nervous runny or nerve impulse is the messages carried by the nerves of the organs of sense (receivers) to the central nervous system and the central device to the organs of the response

The action potential is the result of ions moving in and out of the cell. Specifically, it involves potassium ($K^+$) and sodium ($Na^+$) ions. The ions are moved in and out of the cell by potassium channels, sodium channels and the sodium-potassium pump.

Nervous system consists of individual cells, work together to accomplish complex functions, and these cells called neurons. The runny nervous is the only language that is negotiating the neurons and the form in which translates to the types of effects all of which affect the body, turns runny from one nerve to another cell through the links called Gab junction which is a minute channels allow the flow of current through them directly this method is faster compared to transit through chemical tangles.

**Conclusions**

Pricking a finger with a sharp object awakes sensory nerve endings, causing the spread of impulse nerve fiber organoleptic (sensory way) until it reaches the gray matter of the spinal cord (the nerve center) and then reflected this tourism as a beam of light reflected from the reflective surface to come to the fiber kinetic muscle respondent (the road motor) muscle.
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**References:**

- *Physiology of the nervous system and special senses/module8 - Reflex arc*, Faculty of medicine, Alex. Unv.: Staff members of physiology department of Alexandria University, 2015