AHSANULLAH UNIVERSITY OF SCIENCE & TECHNOLOGY

COURSE NO : 2211

COURSE TITIE : measurement & Instrumentation

PROJECT : MAZE SOLVER

submitted by

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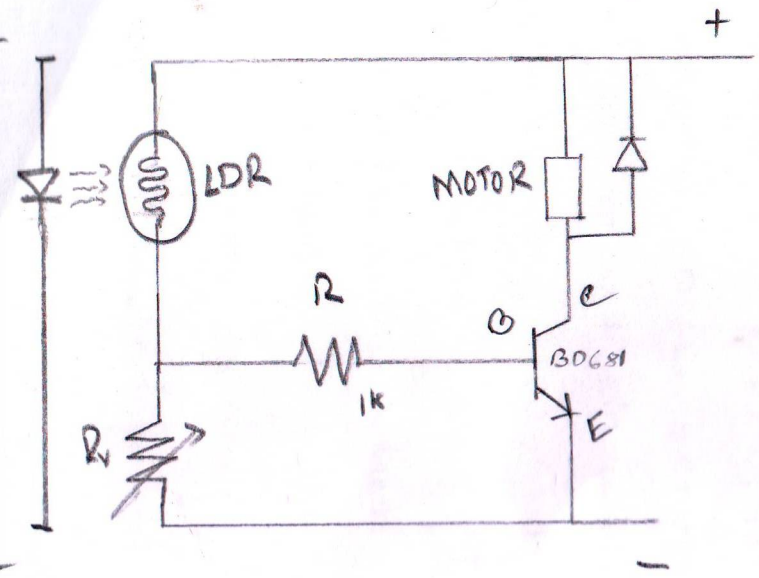
Objective:

The objective of this experiment is to build a maze-solver Robot without micro-controller.

Equipments:

1) BJT (BD681) 2 PCs
2) Pot (10K) Pcs
3) LDR 6 Pcs
4) LED 11 Pcs
6) Resistance 1K-2 PCs, 220Ω-2 PCs
7) DC MOTOR with wheel - 2 PCs
8) connecting wires
9) bread board
10) Diode - 2 PCs
11) DC Adapter - 1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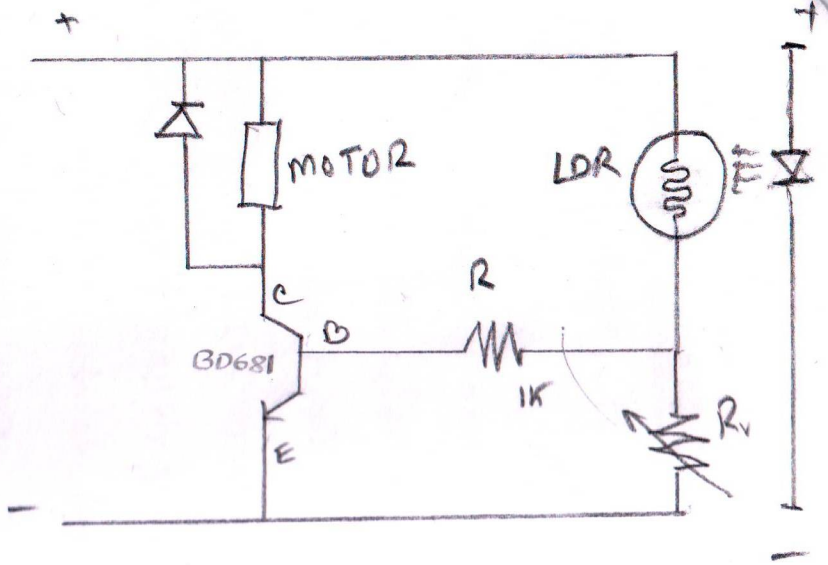
+
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Working Principal:

We are using BJT, LDR, Pot and resistance, motor Diode. we are using BJT as a switch. we need to close the switch for closing the switch, we need voltage across the BE terminal (across the pot). When the voltage is applied the LDR takes all voltage because the LDR resistance is too high when the LDR isn't getting any light. When the LDR getting light which is reflecting from the wall, then the resistance of LDR is low so. the voltage drop is happning across the BE terminal, so the BJT is conducting current so the motor runs. we are using 1K resistance for safety in B terminals because the input impedence is low. we are using Diode because after running the motor, when the BJT is off again, then the motor will not stop right the moment. so it will work as a generator according to DC Motor principle, so the generated voltage couldn't do any harm at circuit. Actually is circuit is for following two wall. It can solve and side L shape maze. It can't salve T shape maze because when the robot is in T shape maze the two motor will stop as the circuit degined.

It's the limitation of this Robot.

TROUBLE SHOOTING

Qus: Where should we place the LDR?

Ans:
We should place the LDR behind the front wheel and the LDR must be in Parallel with the center of the wheel.

Qus: Which kind of supply should we use?

Ans:
We can use DC Battery and DC Adapter as a source. But there are some problem in using Battery. If the current rating of the Battery in not high then it will not work properly. So, working with DC adapter is suitable.

Qus: which kind of LED should we use?

Ans: we have use Brighter LED. Otherwise we couldn't get proper Reflection.

Qus: How LDR Respons?

Ans: As a sensore LDR is not very good. It has a very poor sensivity. That's why we used three LDR in Parallel.

Qus: which kind of BJT should we use?

Ans: In this Project we use high gain BJT. We could also use low gain BJT. But there will be some problem. If high ammount of current go through that BJT. it will be damaged. That's why we use high gain BJT.

Qus: Why we use a resistance along with BJT?

Ans: In this ckt the input impedence is very low thats why we use a 1kΩ Resistance with Base terminal.

Qus: How much voltage we should apply?

Ans: supply voltage should be between 10-12 V

Qus: Where should we construct the circuit?

Ans: we can construct the ckt in vero board and also in bread board. Both cage has some limitations. In vero board some time ckt may not work properly. In bread board connection can be disconnected from the board.