

**Sukkur Institute of Business Administration University**

Department of Electrical Engineering

Electronic Devices and Circuits- Fall 2021

**Semester Project Fall - 2022**

**Project Name**

**Car Parking Control:**

Group Members:

1. Wakeel Ahmed.

2. Aamir.

3. Bhai Khan.

Instructor: **Dr: Afaque Manzoor Soomro**

Certificate

*It is certified that Mr.* ***Wakeel Ahmed*** *,* ***Aamir*** *and* ***Bhai Khan*** *having CMS ID’s* ***(033-19-0026) ( 033-20-0027) (033-19-0015)*** *are the students of* ***BE-III(B)*** *have carried out the “****Semester Project****” for the subject* ***of Electronic Devices and Circuits (EDC)*** *as provided by the Instructor of the subject at the department of Electrical Engineering, Sukkur Institute of Business Administration for* ***Fall-2021.***

Date: 21/2/2022 Instructor’s Signature

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**Abstract:**

When have seen an unprecedented transition after the industrial revolution. In this era technology, the human standard of living has been totally changed, even now we are working on a human expedition to Mars. All of this is achieved through a disruptive and innovative approach to software and hardware.

Keeping in mind above transition and its need, we decided to our learned skills effectively on hardware logic. Transistor near to us is a basic building block for our good design thinking.

Our "car parking control system" is based on transistor logic, where transistors operate to control the permeation management system.

**Introduction:**

We have selected car parking control project in this semester. Today; in the modern world as the population is increasing; the need of the discipline and management is necessary to carry out the things smoothly without and disturbance. So the car parking is the one of the needs of the world especially in cities and highly populated areas that should be paid attention. So keeping this in mind we also tried a car parking control project.

**Components:**

1. Resistors (5 kilo ohm, 1 kilo ohm)
2. Switches
3. BJT Transistors(NPN, PNP)
4. JFET Transistor
5. DC motor (5 V)
6. Connecting wires
7. Bread Board
8. Battery (9 V )
9. LED

**Working Principle:**

Our project consist of two Parts: Parking area and Gate. In parking area we have used SPST switches as a car parking slots for an indication of the presence of car or not. We have supplied switches a negative source, in order to control the FET transistor used at the gate. With the JFET transistor we have used BJT transistor that stabilize the voltages and signals the motor used at the gate and is the verification for the space in the parking slots. To operate the motor, we have followed the H-Bridge Circuit. H bridge circuit controls the direction of the motor either in clockwise or anti clockwise. To control motor in either direction we have used SPST switches. When we apply source to the circuit i-e negative supply to switches and positive supply to FET and BJT both. When there is no car in the slot, BJT indicates the slots are empty. But when slots are occupied the negative signal is applied to the “gate” terminal of FET and this ceases the current at the gate because the output of the FET is connected in the base of BJT transistor. This indicates that slots are occupied and there is no space in the parking area.

**Results:**

Our circuit worked as we expected. If there is no car in the parking slot, it should signal that the parking slot is empty with the help of LED and also signal that the parking is occupied when the LED is off at the gate.

**Conclusion:**

This is the manual car parking project. That is based on the switches in the parking slots and the gate is controlled by the FET transistor together with the BJT transistor. We have used switches because we don’t have enough equipment’s like sensors in the parking slots as well as on the gate. And we don’t have studied the intelligent technology like microcontrollers, Arduino etc. to make our project intelligent. Our project is little bit intelligent because we have used FET and we supply negative to its gate and the output of FET to the base of BJT transistor. So when the parking slot is filled, the gate terminal of FET is supplied with the negative battery that will block the current in FET and as FET is connected to the base of BJT, BJT will go in cut-off region and gate will identify the filled parking slot by lighting off LED.