



PRINCIPLES OF ELECTRIC AND ELECTRONICS COURSE APPLICATION PROJECT REPORT

PROJECT TITLE: ELECTRICAL WIRING(INSTALLATION)

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Introduction:

In this report, we present the implementation of five different electric and electronic installation projects. These projects were undertaken as part of our electric and electronic course application.

The projects include:

1. Switch Installation with Incandescent Light Bulb Control
2. Doorbell Installation for a Double-Floor Building
3. Motion Sensor Installation for a Double-Floor Building
4. Installation of a Fluorescent Light Bulb with Electronic Ballast
5. Installation of a Fluorescent Light Bulb with Electromagnetic Ballast

Each installation was designed and implemented by group members Abass and Metin. This report details the implementation process, challenges faced, and the solutions adopted for each installation.

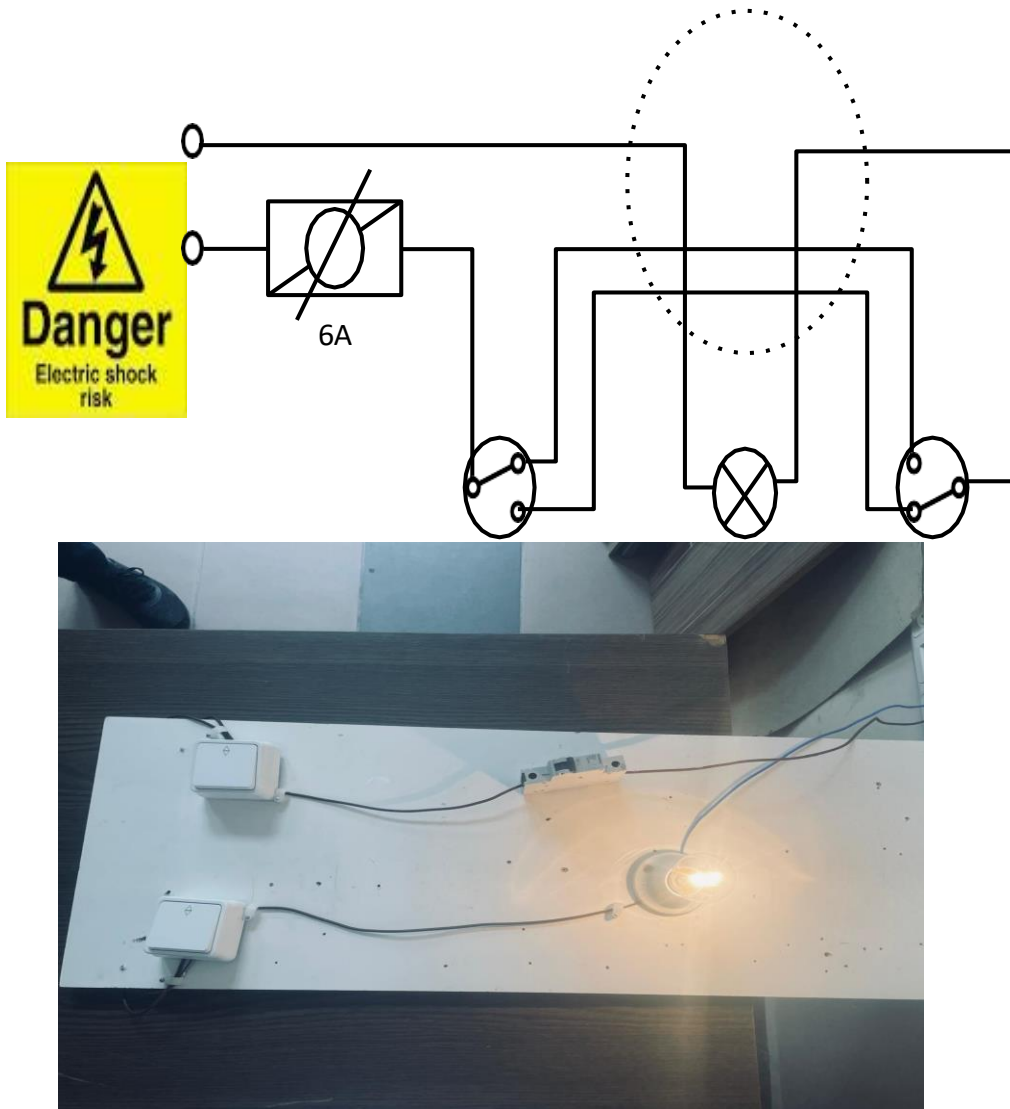
1. Switch Installation with Incandescent Light Bulb Control:

The first installation focused on controlling an incandescent light bulb using two Single Pole Double Throw (SPDT) switches along with a circuit breaker for safety purposes. The circuit was designed to ensure efficient and safe control of the light bulb.

Challenges Faced:

- Ensuring proper wiring to prevent short circuits.
- Ensuring the circuit breaker functions effectively.
- Proper placement and connection of SPDT switches.

Schematic diagram and after picture below



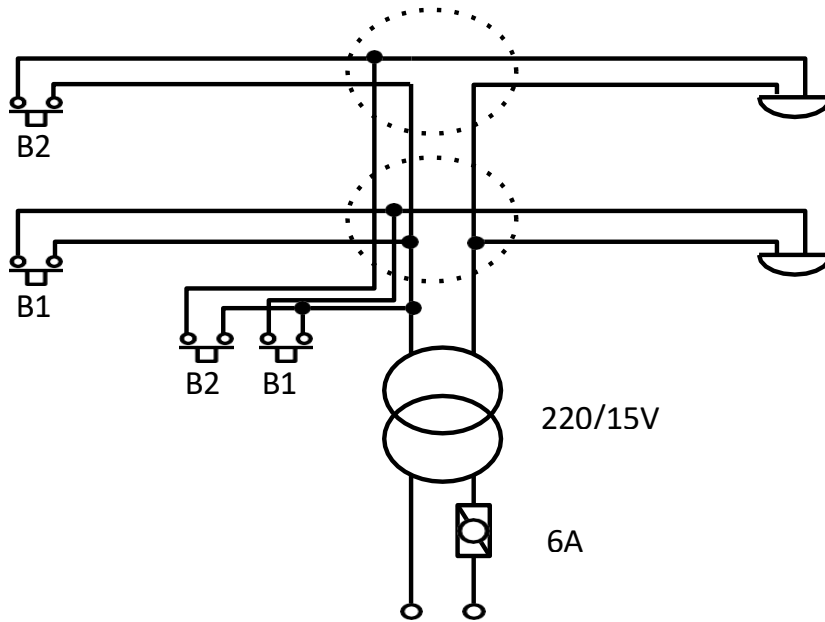
2. Doorbell Installation for a Double-Floor Building:

The second installation involved installing a doorbell system for a double-floor building with a flat on each floor. The system included outside switches and a transformer. However, one of the challenges we faced was that the transformer was unable to supply the required voltage for the circuit. To address this issue, we used a DC battery in the bells to supply the required voltage.

Challenges Faced:

- Transformer unable to supply the required voltage.
- Integration of the DC battery as an alternative power source.

Diagram below (schematic and after picture)

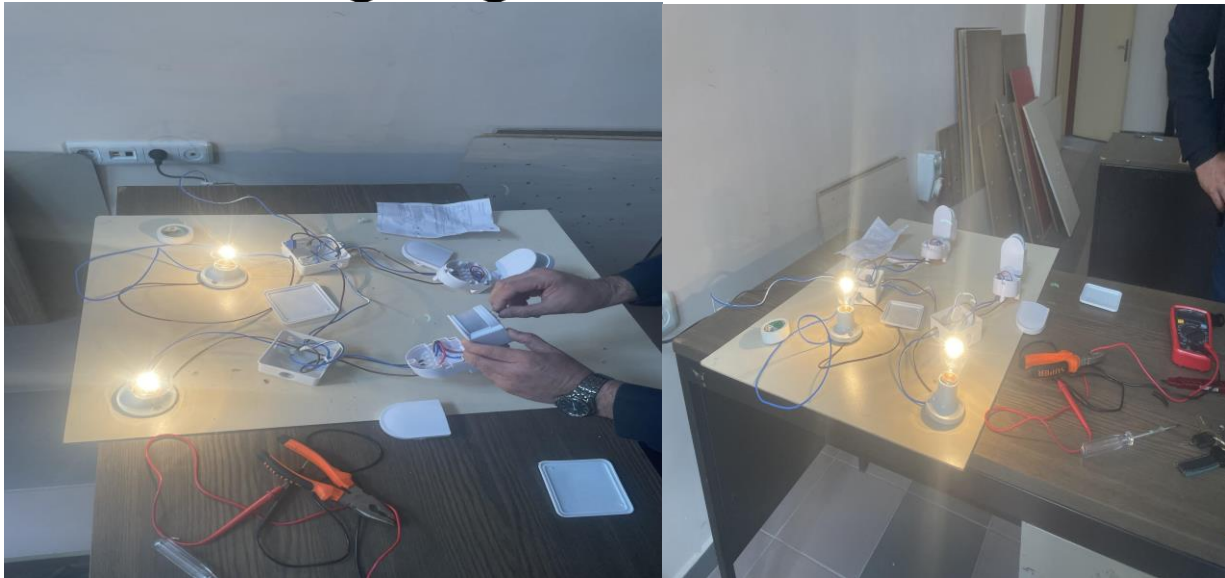
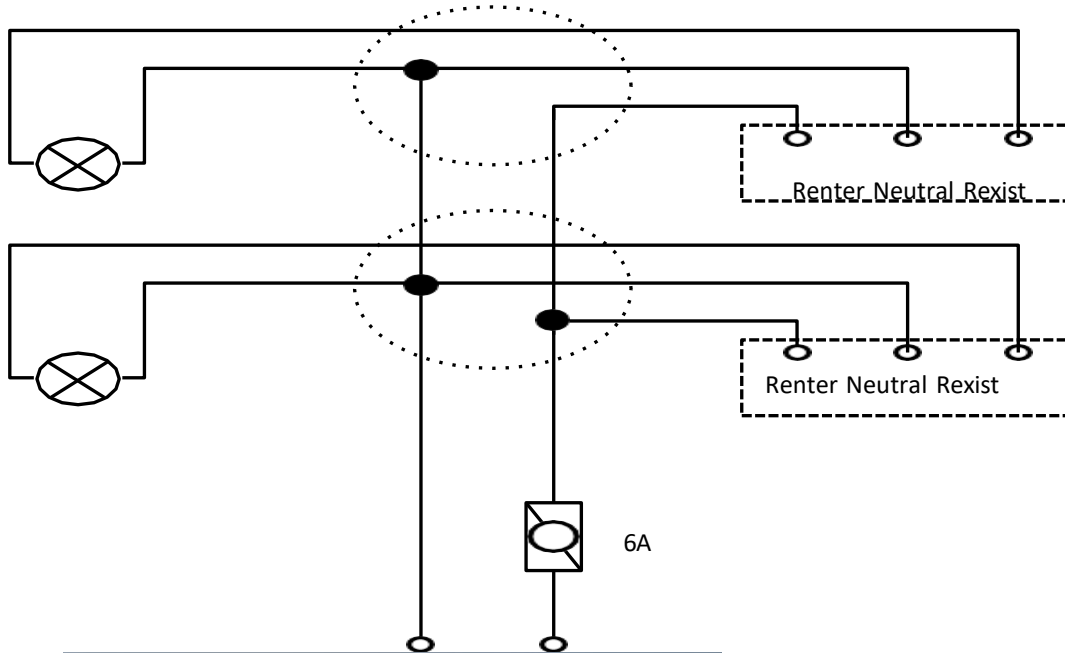


3. Motion Sensor Installation for a Double-Floor Building:

The third installation focused on installing a motion sensor system for a double-floor building with a flat on each floor. The motion sensor included lux control for day and night settings, angle view adjustment, and time control for determining the turn-on time.

Challenges Faced:

- Calibrating lux control for day and night settings.
- Adjusting the angle view for effective motion detection.
- Programming the time control accurately.



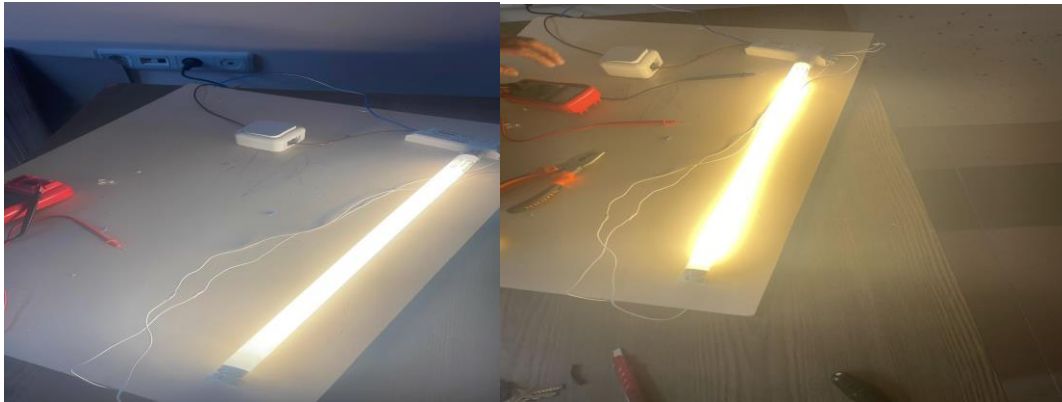
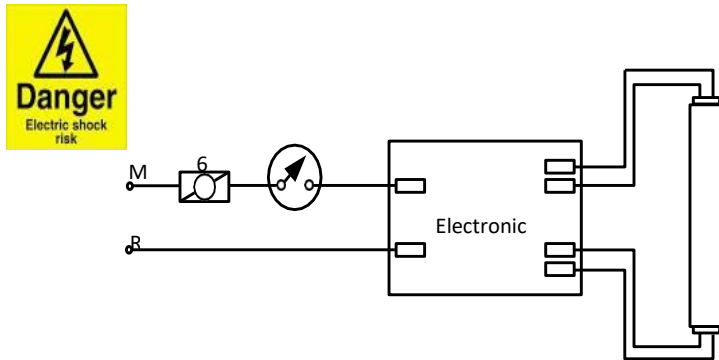
4. Installation of a Fluorescent Light Bulb with Electronic Ballast:

This project involved the installation of a fluorescent light bulb with electronic ballast. The electronic ballast was chosen for its energy efficiency and improved light output.

Challenges Faced:

-Understanding the electronic ballast circuitry

-Ensuring compatibility between the ballast and the fluorescent bulb



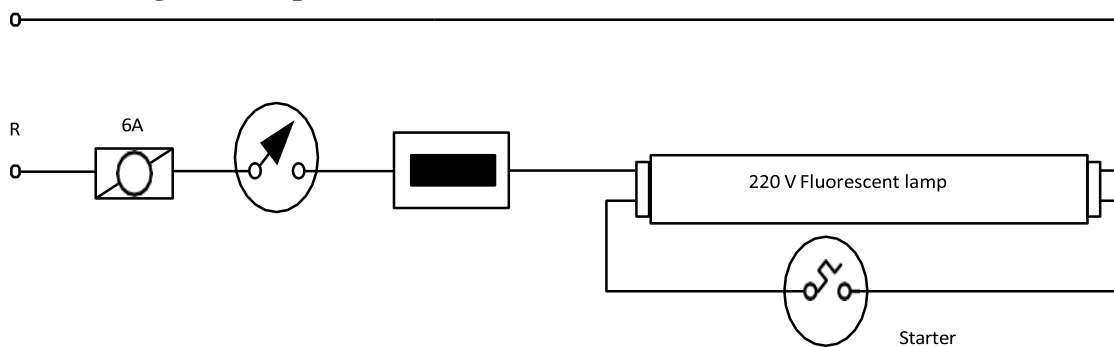
5. Installation of a Fluorescent Light Bulb with an Electromagnetic Ballast:

Similar to the previous project, we installed a fluorescent light bulb, but this time with an electromagnetic ballast. The electromagnetic ballast was chosen for its simplicity and reliability.

Challenges Faced:

- Properly wiring the electromagnetic ballast
- Ensuring compatibility between the ballast and the fluorescent bulb

Schematic diagram and picture below





INSTALLATION MATERIALS:

2 electronic bells	2 incandescent bulbs and their sockets
Double bell button	2 Motion sensors
2 surface-mounted doorbell switches	Power transformer (Input: 220V-Output: 15V)
3 square surface mounted antigron junction boxes	10 m installation cable of at least 2 colors
18W Fluorescent lamp and sockets	1 box of spiked hook no:3 (2x1.5-3x1.5)
18W electronic ballast	1 hammer
18W mechanical ballast	1 pliers
surface-mounted ordinary key	1 side cutter
1 door automatic	1 screwdriver

Conclusion:

Overall, the project provided valuable hands-on experience in integrating various electrical installations. Through this project, we gained practical knowledge of circuit design, wiring, and troubleshooting techniques. Despite facing several challenges, we were able to successfully implement each installation, ensuring functionality and safety.

Acknowledgments:

We would like to thank our instructor Prof. Dr. Murat BARUT for providing guidance and support throughout the project.