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EE-251



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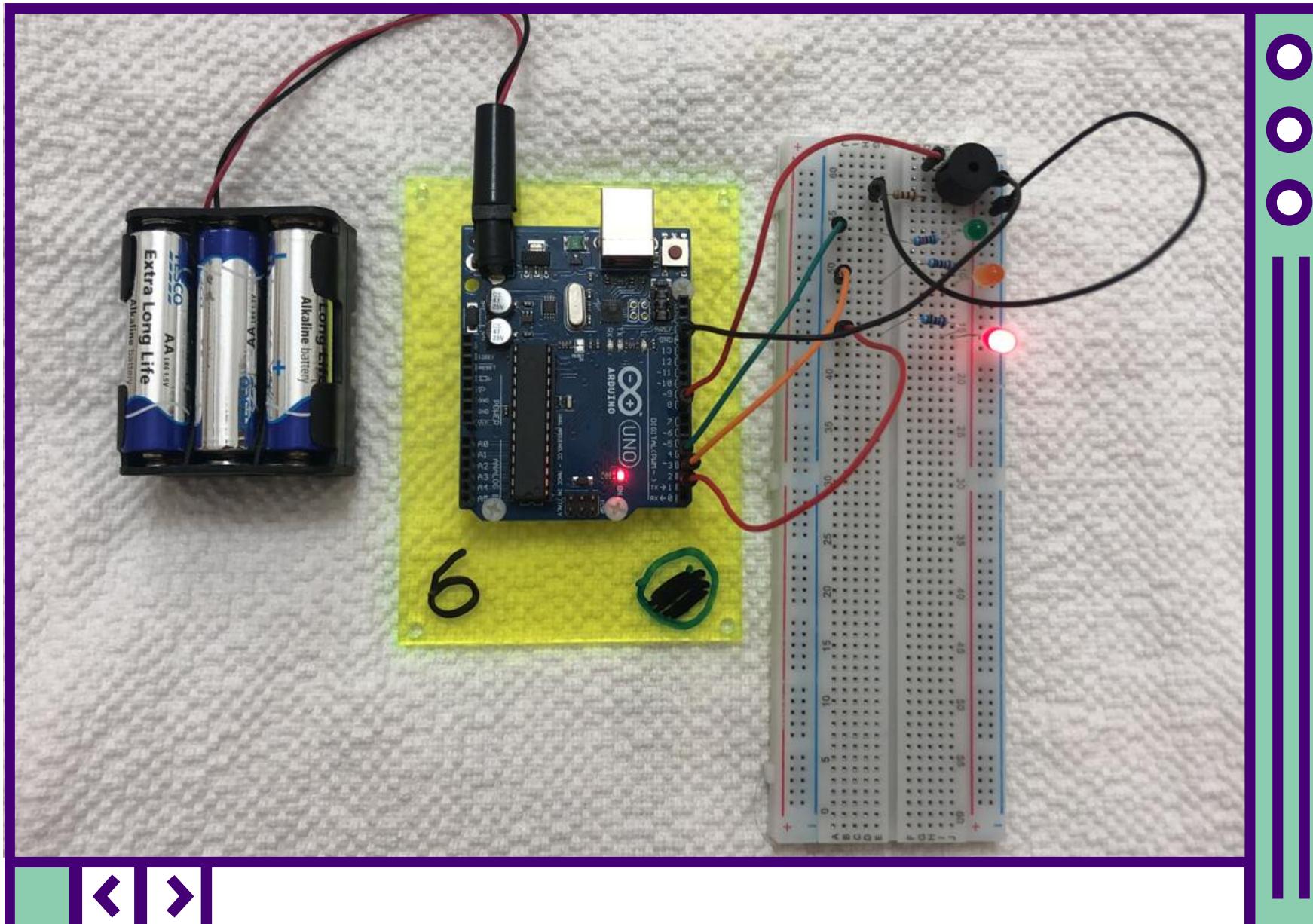
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INTRODUCTION

This booklet done by industrial engineering students' batch 19 at king Abdul-Aziz university in Jeddah. It demonstrates students' projects of Fundamentals of Electrical Circuits (EE251) course. The significant of these projects is to get a better understanding of the course contents, to enhance teamwork and to develop practical skills of the industrial engineering students.

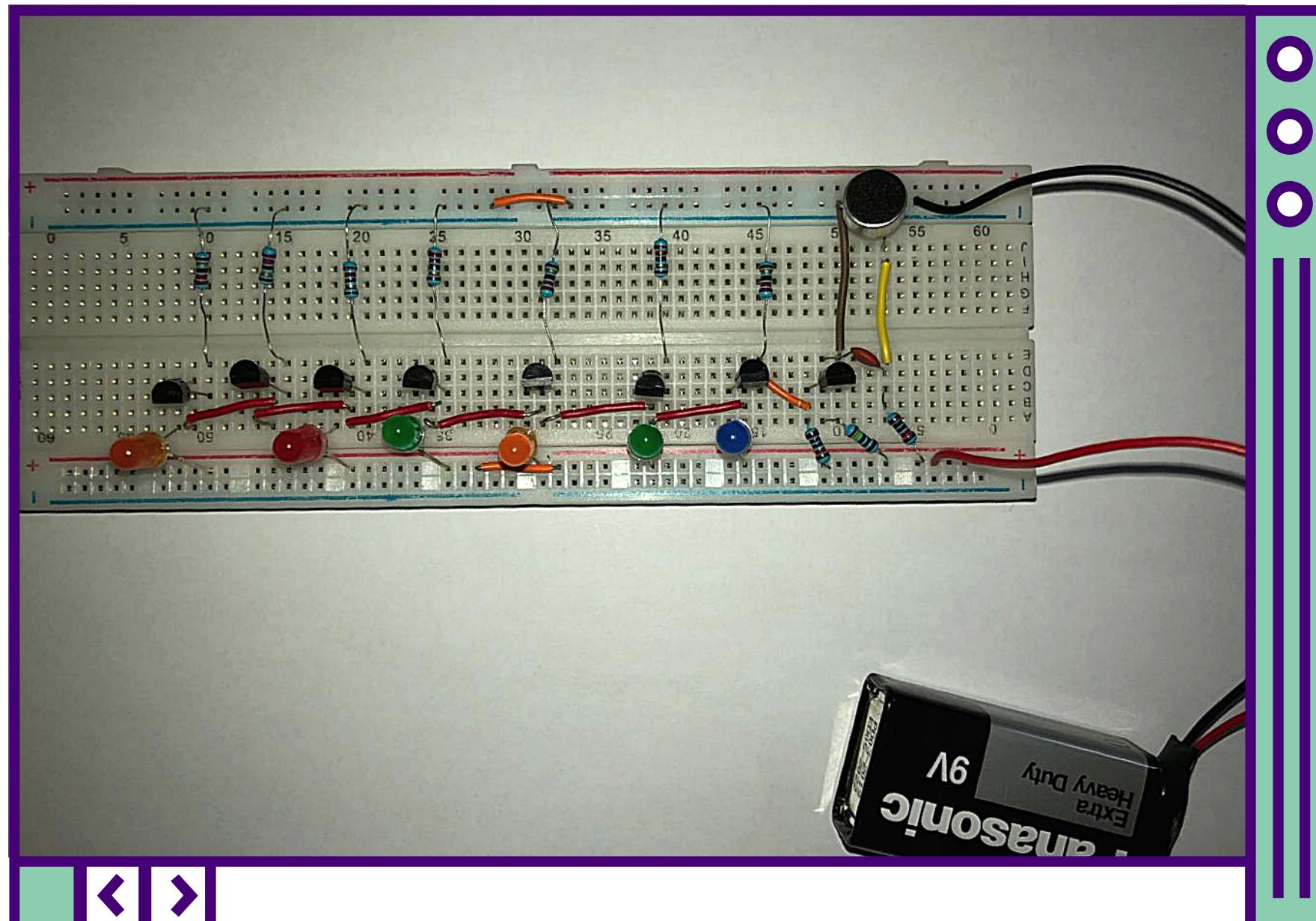
Traffic Light



In this project, a traffic light will be implemented in an electrical circuit to illustrate the concept learned in this course. It uses three (Green, Yellow, Red) LED lights to represent the traffic lights. Resistors, which restricts the flow of electricity in a circuit, controlling the current that passes through elements. Arduino UNO coding is used as an internal timer. The buzzer is a signaling apparatus producing different tones based on the frequency value, the frequency is used to determine the tone the buzzer will play. The higher the frequencies, the higher the pitch of the tone.

BY: ROA, NOURZAN, BASHAIER, ALDANA

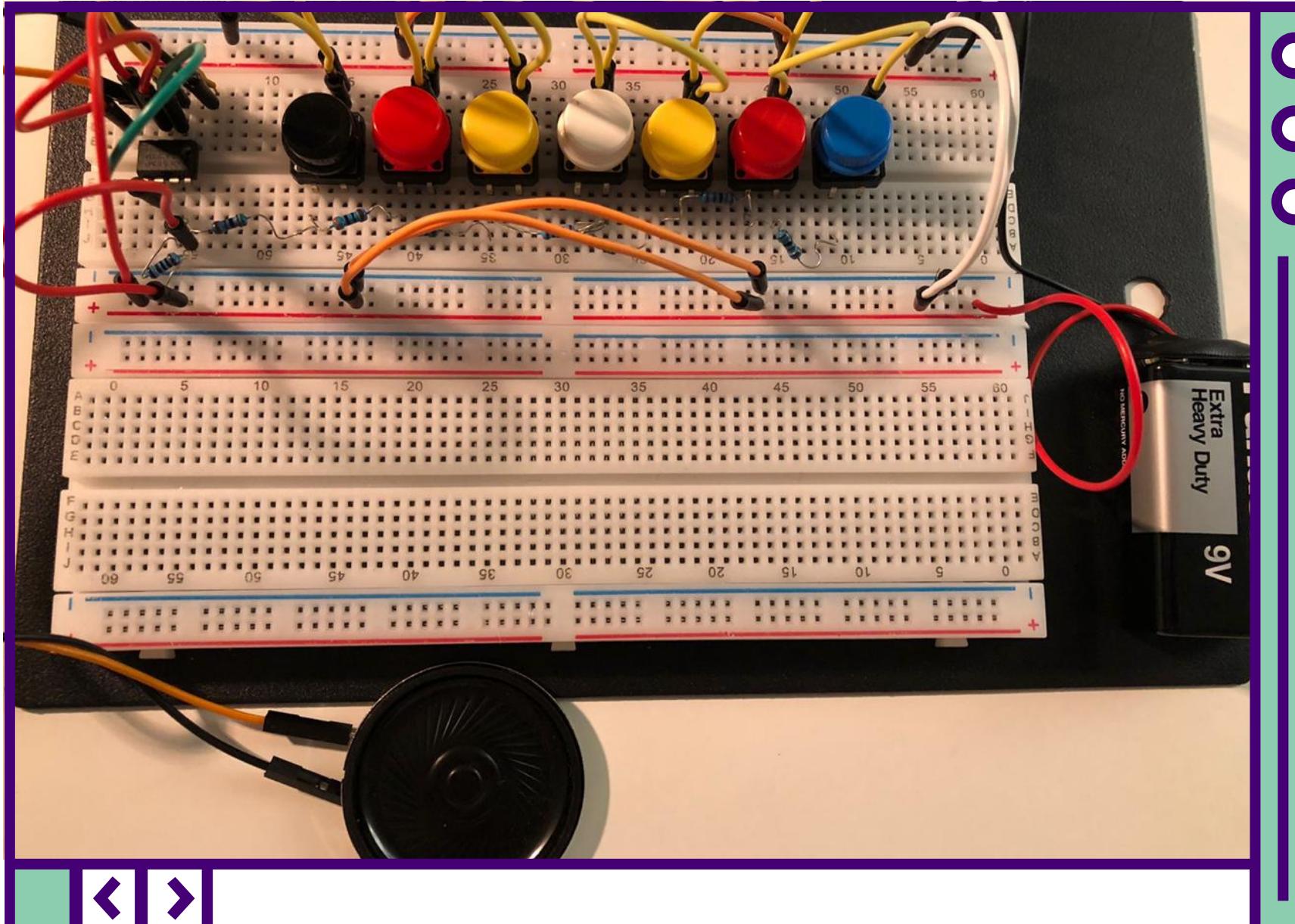
Led Music Rhythm



In the Fundamentals of Circuit (EE251) course, it is required to design a simple circuit and analyze it. The aim of this project is to apply the concepts of learned and the concept of conserving energy. Conserving energy is the effort made to reduce the consumption of energy by using less of an energy service, which serves the double purpose of reducing electricity cost and manpower. The article proposes a design scheme of LED music rhythm lights based on audio and the frequencies, studying the audio signal collection.

BY: EZDEHAR, MAHA, JOURY, ALANOUD

Piano Circuit

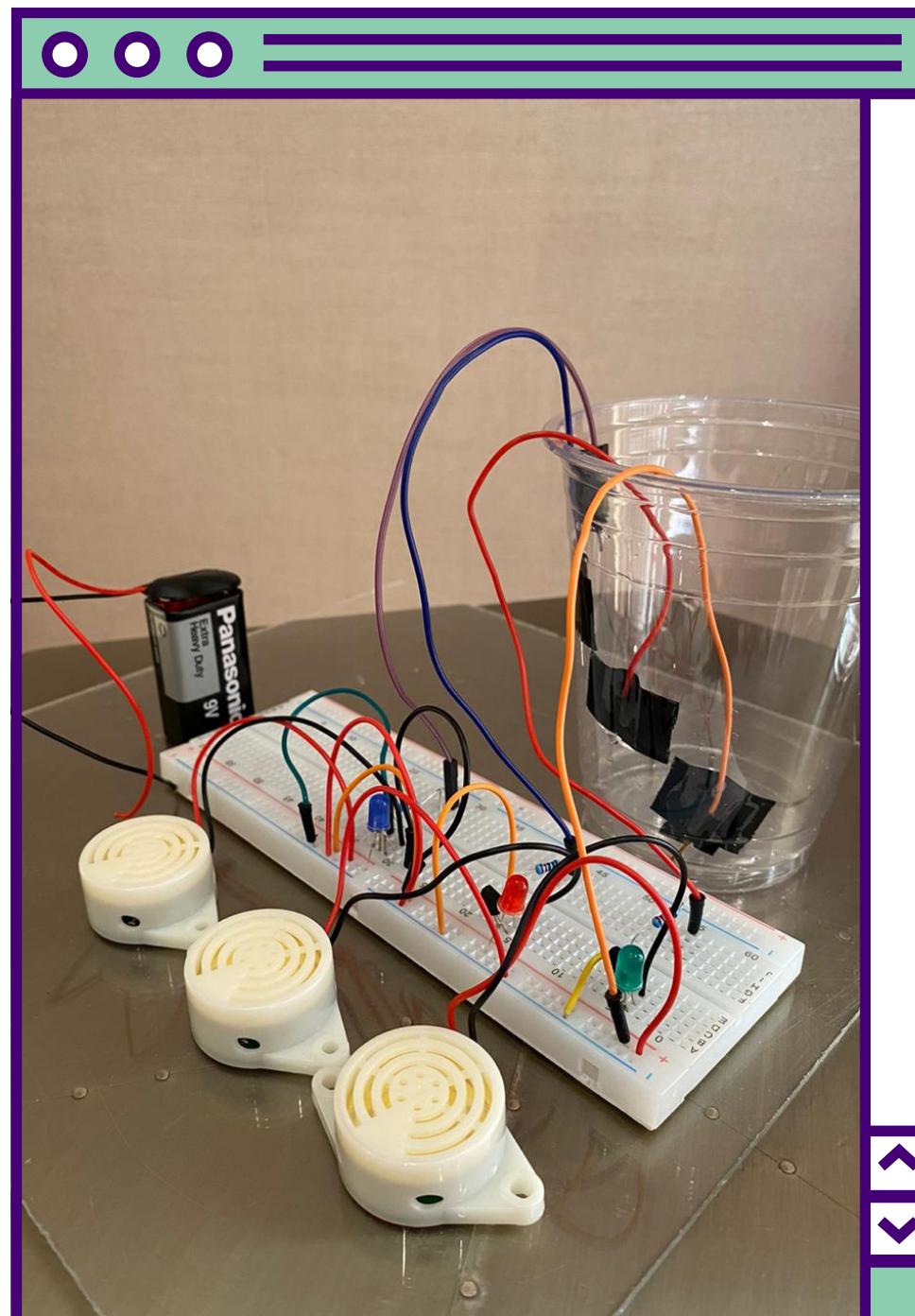


The aim from this project is to apply the main concepts learned in the course, such as electric quantities, circuits elements, and analyzing circuits. At first, the idea for the project was discussed as a group, and in the end, the final decision was to design a piano. This concept of a piano is achieved by making the timer generate seven different kinds of sounds. The different sounds are generated through the timer by allowing it to run as a free-running mode or a stable mode or square wave mode with a variable frequency output option.

BY: JENAN, REEM, OMNIAH, TALAH, LARA



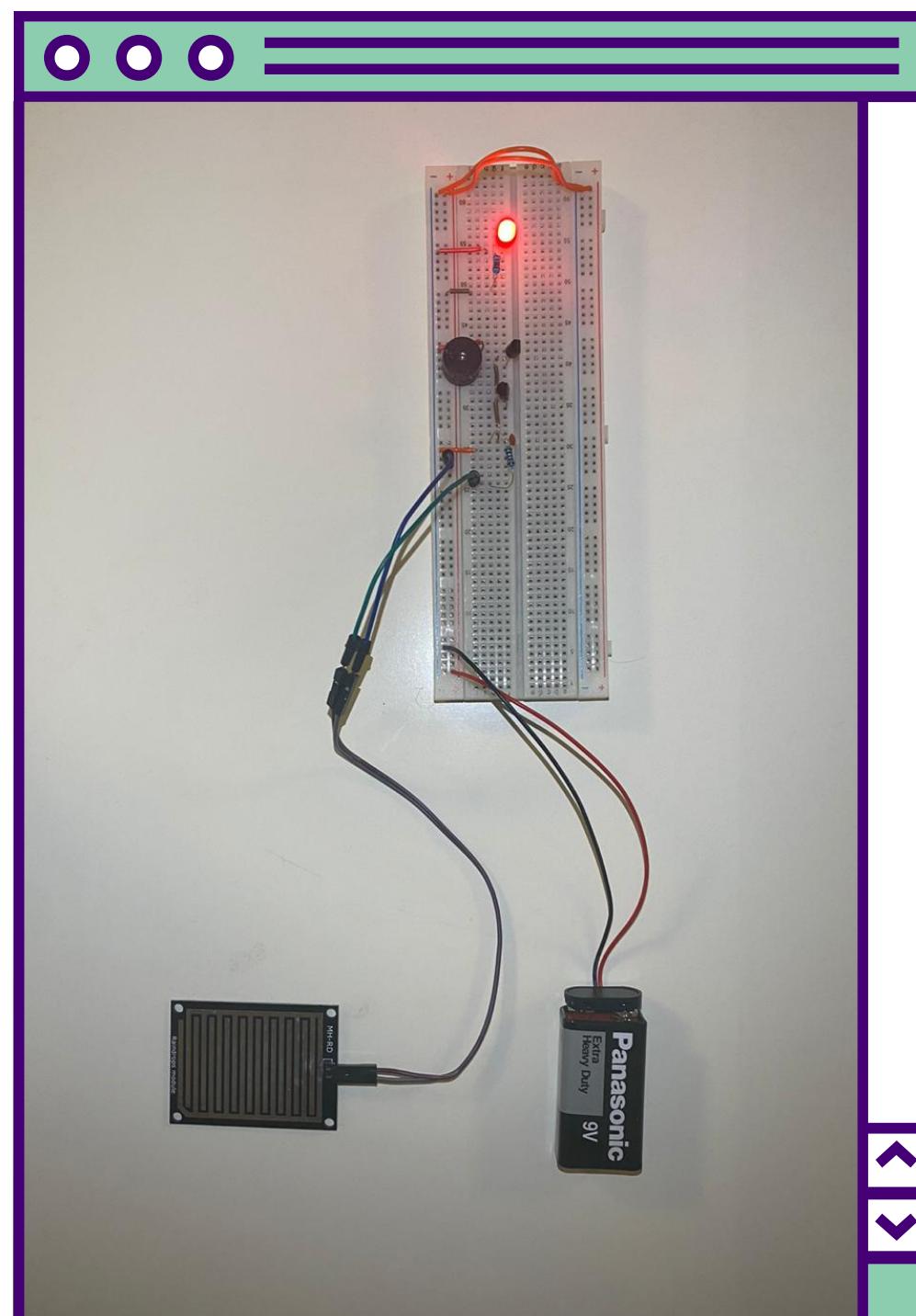
Water Level Indicator



This simple water level indicator circuit is very useful to indicate the water levels in a tank. Whenever tank gets filled, we get alerts on particular levels. we have created 3 levels (low, medium, and full). When the water reaches a certain level the led turns on and we get a beep sound from the buzzer.

BY: LEENA, HAWRA, LUJAIN, TASNEEM

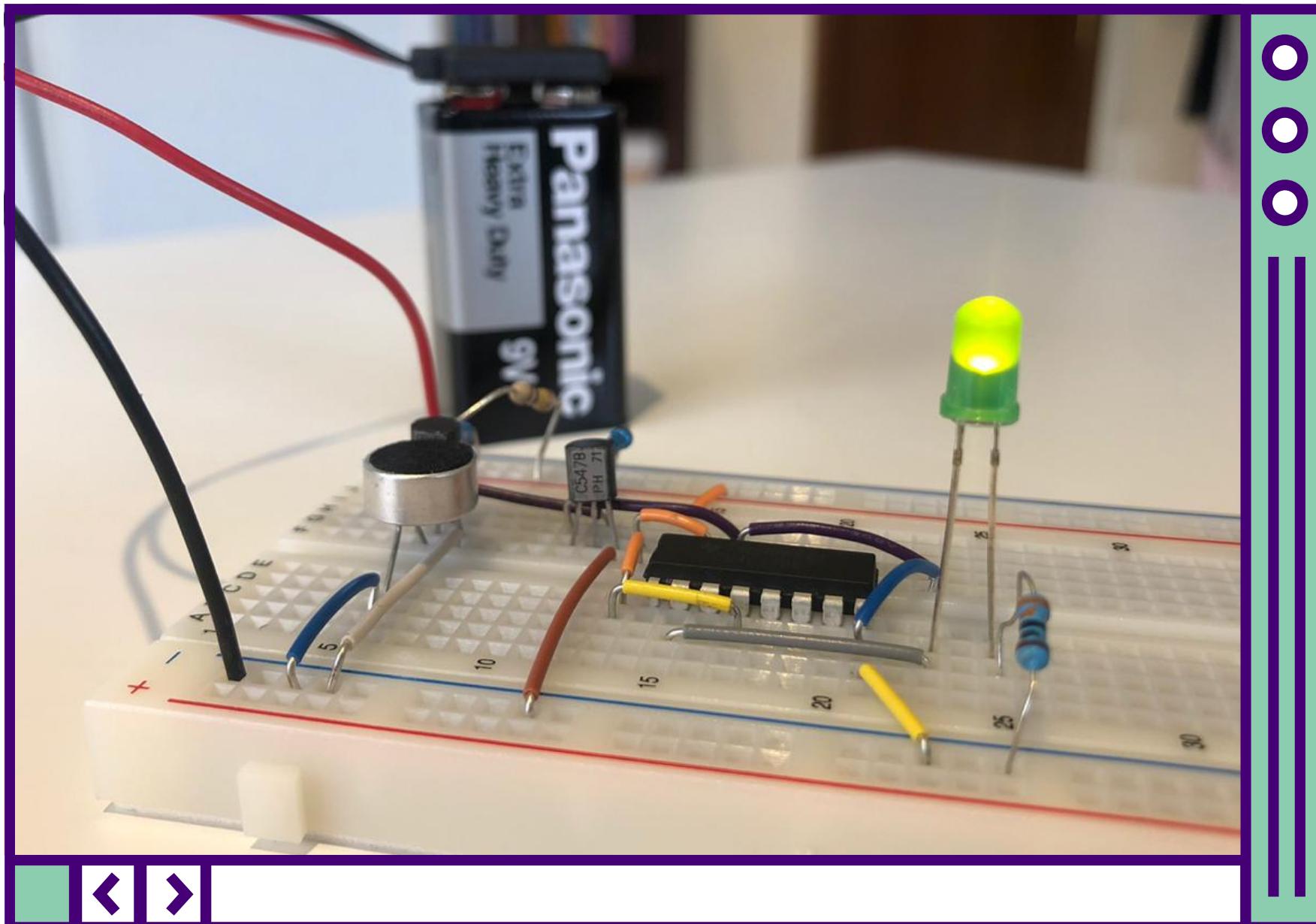
Rain Detector



The idea of the project is to detect the presence of water on a pad, which can help when the existence of water can cause a damage and hence the project would detect it and notify the user with a buzzing sound. It is a simple circuit that uses a buzzer to sense the rain and provide a sound. The rain sensor is the principal element in this circuit. The buzzer will make a sound whenever the sensor becomes wet. Some resistors and capacitors were used in order to provide the necessary current in this circuit. In addition, a transistor has been used as buzzer switch. It turns the buzzer on when the sensor is wet, and off when the sensor is dry.

BY: REEM, GHADAH, SAFA, ASEEL, ROLA

Clap Light



The clap-based light is a light the switches on/off when a clap is heard. The circuit is simple and uses resistors, mic, integrated circuit 4017, 9V battery, and a led light.

The project costed 57SAR only and took 4 hours to connect it successfully.

For future developments the light can switch on/off using voice detection the detects the words "on/off"

CONCLUSION

One learns most usefully by doing. Applying the contents of the course on real life projects helped on getting a clear picture of the basics of electrical engineering circuits. The students are now excited for a wonderful engineering journey and are willing to wake the scientist and engineer within.

As a wise man once said:

"Tell me and I forget, teach me and I may remember, involve
me and I learn."

– Benjamin Franklin

Special thanks to:

Dean of Faculty of Engineering:

Dr. Abeer Alkhouri,

Head of Electrical and Computer Department:

Dr. Kawther Moria,

Dr. Reda Ghoname and Eng. Maria Melebari.

NEVER STOP LEARNING

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IE19