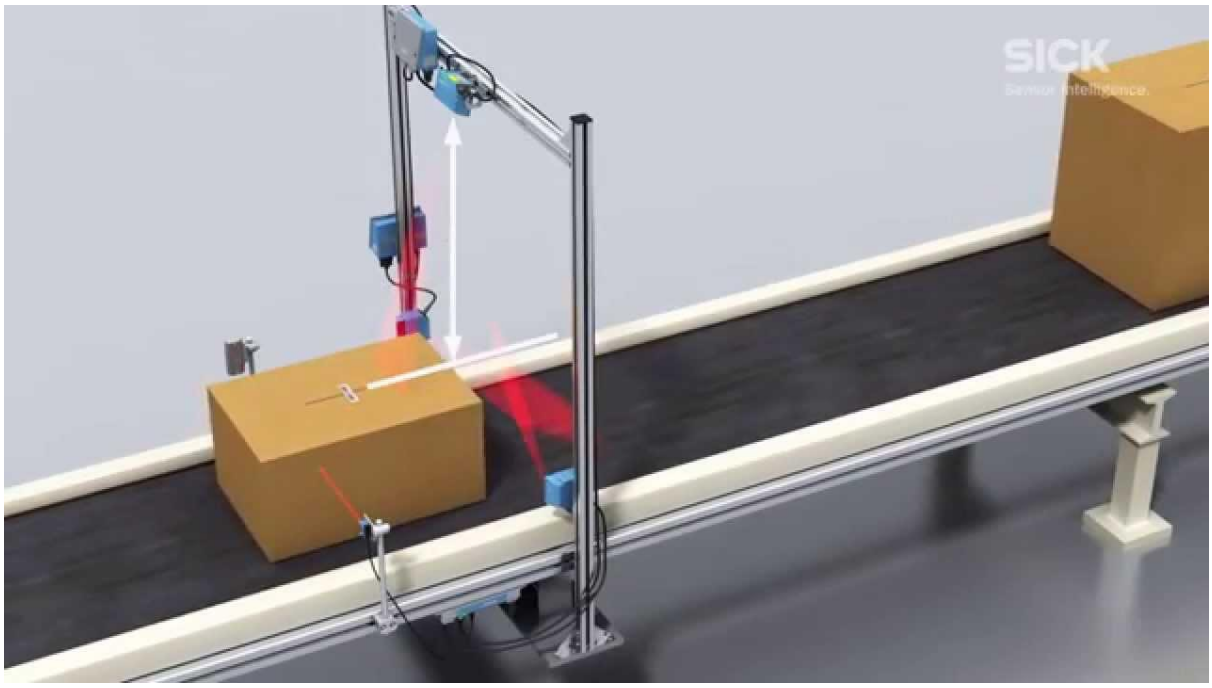
OBJECT SORTING MECHANISM SYSTEM



GROUP 32

W.G.Anushanga Pavith Thalisha

S.A.Piyumali Sandunika

N.B.Ashini Senara

INTRODUCTION

In this project, a sorting mechanism system is designed and created. This mechanism is based on a conveyor belt system. Our aim of this project is to sort certain number of objects among several objects according to their height. The physical system appearance, the circuit system of the control unit and the program are the main aspects of this project. To create the program and the circuit design simultaneously “Arduino” and “Proteus” softwares were used.

DESCRIPTION

Initially, the amount of objects that should be sorted is entered by the user to the program.The user has given two keys of the keypad “*” and “#” to select options. The user can select either the short object count or the tall object count from the keypad option keys.

- * - Small objects
- # - Tall objects

The sorting process is done with the help of IR sensors. The objects are moved through a conveyor belt system. There are two IR sensors situated in different heights. If an object is detected by both IR sensors that object is considered as a tall object. If only the lowest position IR sensor detects an object that object is considered as a short object. The user can enter the expected tall or small object count with the help of keypad. After user has entered the number of objects that are needed to be sorted, the user can confirm the sorting process.

- # - To confirm sorting
- * - To move to the previous state(move back)

Then the current count of objects are displayed in a LCD screen. After completing the count the conveyor belt is stopped and the LCD screen shows the “completed” message, the total count and the tall or short object count.

Furthermore we have used 3 resistors and 3 LED s 2 in green and 1 in red.When the circuit is on, one green LED gets on. When the motor is on, other green LED gets on. When the sorting process is done the red LED gets on.

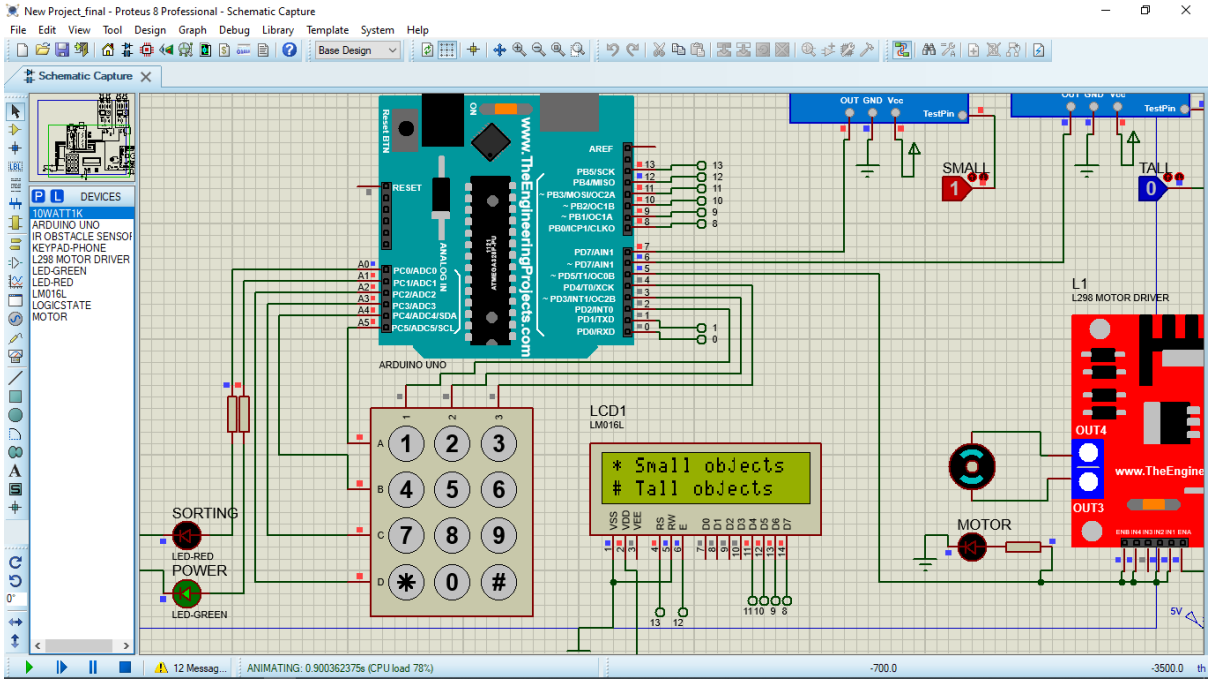
For the “Proteus” software the following devices were used to design the circuit design.

- Arduino UNO
- 10WATT1K (Resistor)
- IR Obstacle sensor
- Keypad-phone
- L298 motor driver
- LM016L (LCD)
- Logicstate
- Motor
- LED Green
- LED Red

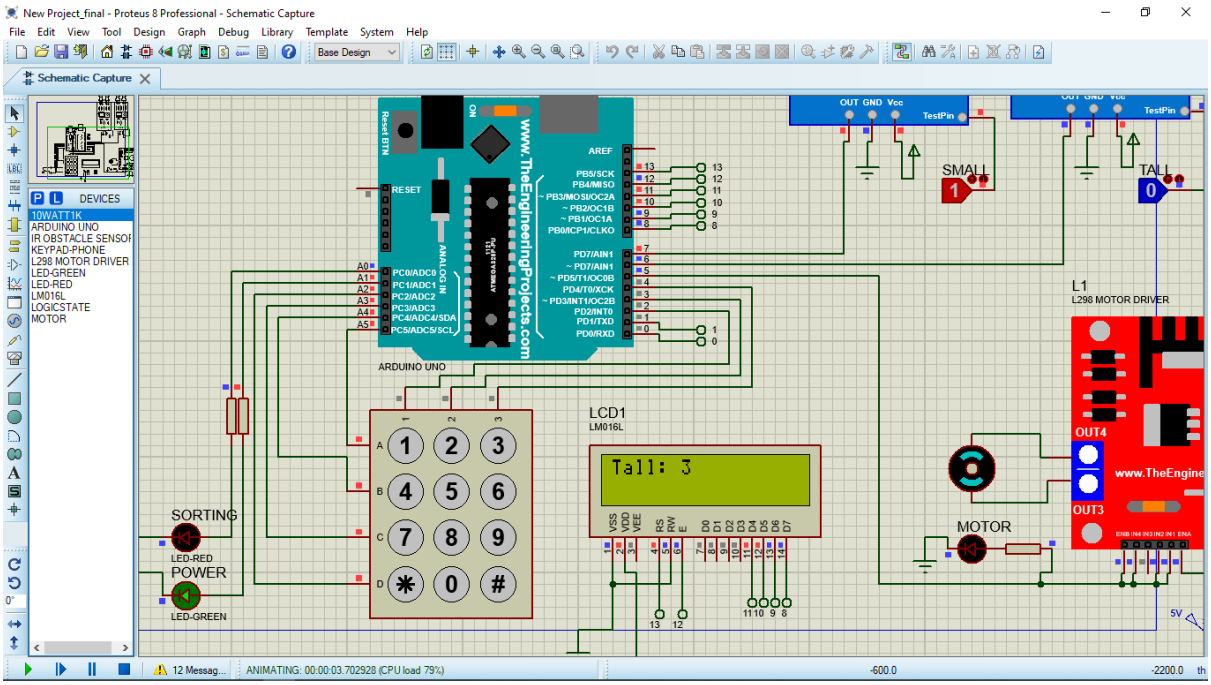
Note: Default terminals were used to connect LCD display with Arduino UNO board as lot of wires make the circuit complex and difficult to identify.

The circuit design and the display shows like this during the operation.

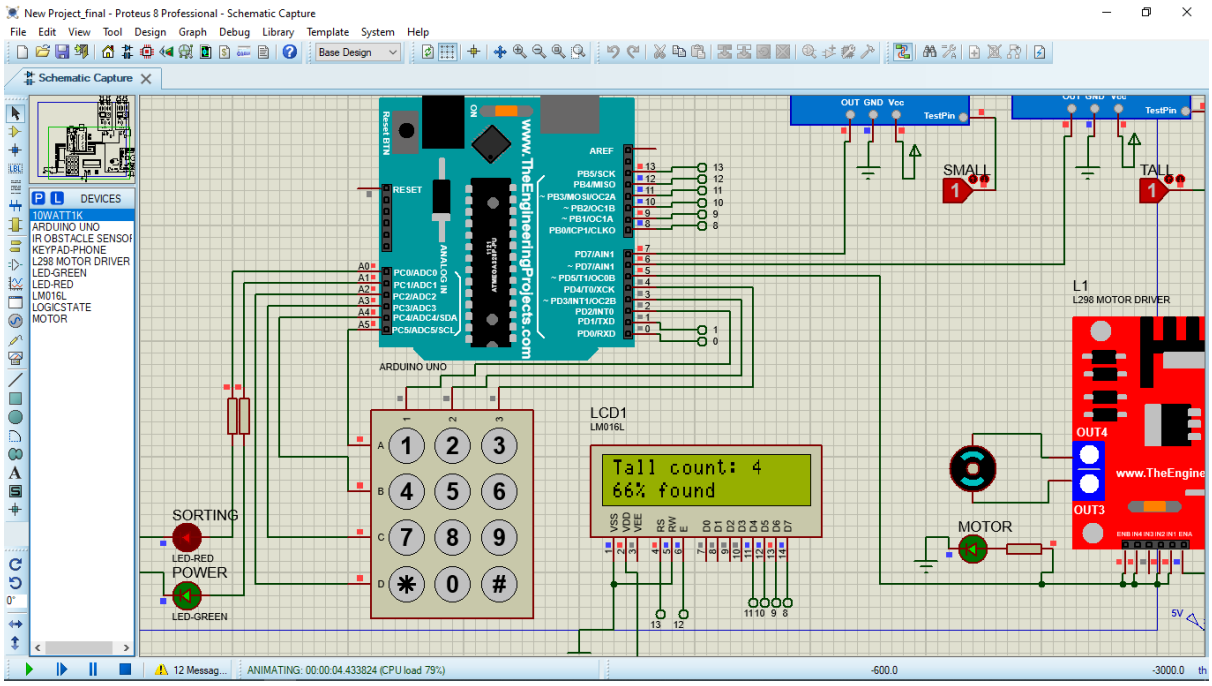
I. Selecting the sort object type.
Short (*) or tall (#)



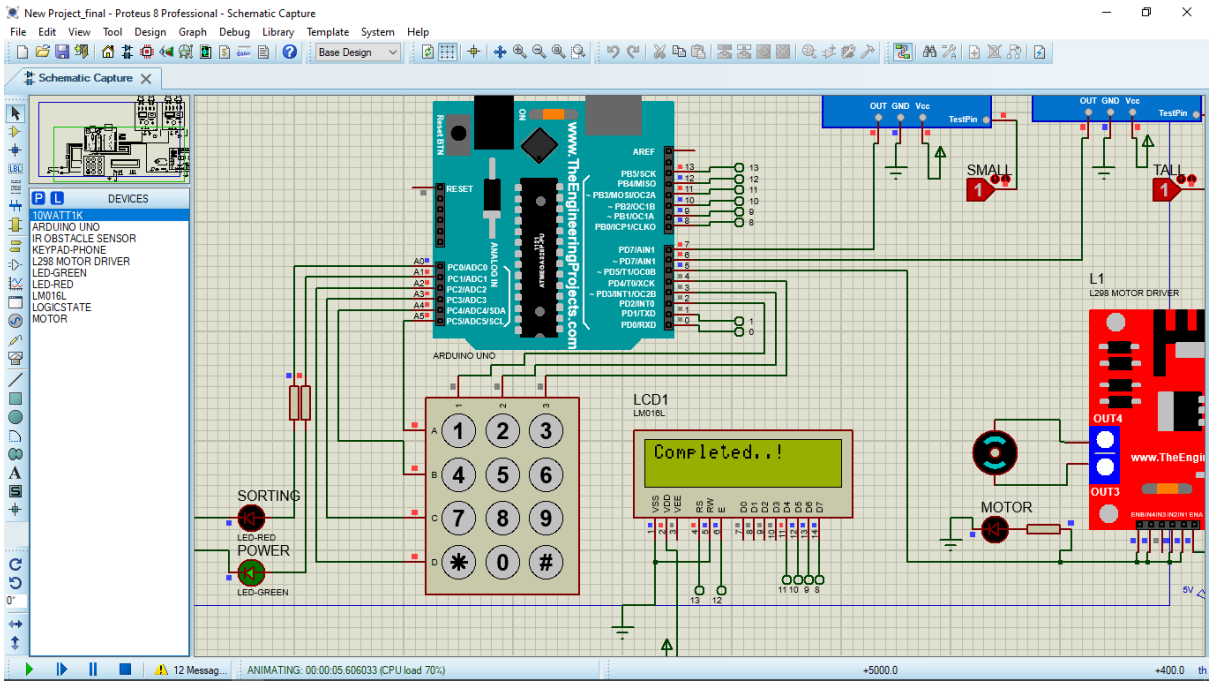
II. Display the object type according to the user's choice (if the user choose tall objects) to be sort and the entered count of objects.



III. Displaying the tall object count while the sorting process is in progress.



IV. Display the completed message after the sorting process is finished.



V. Display the count of the total sorted objects and the overall percentage of tall or small objects as the user's choice.