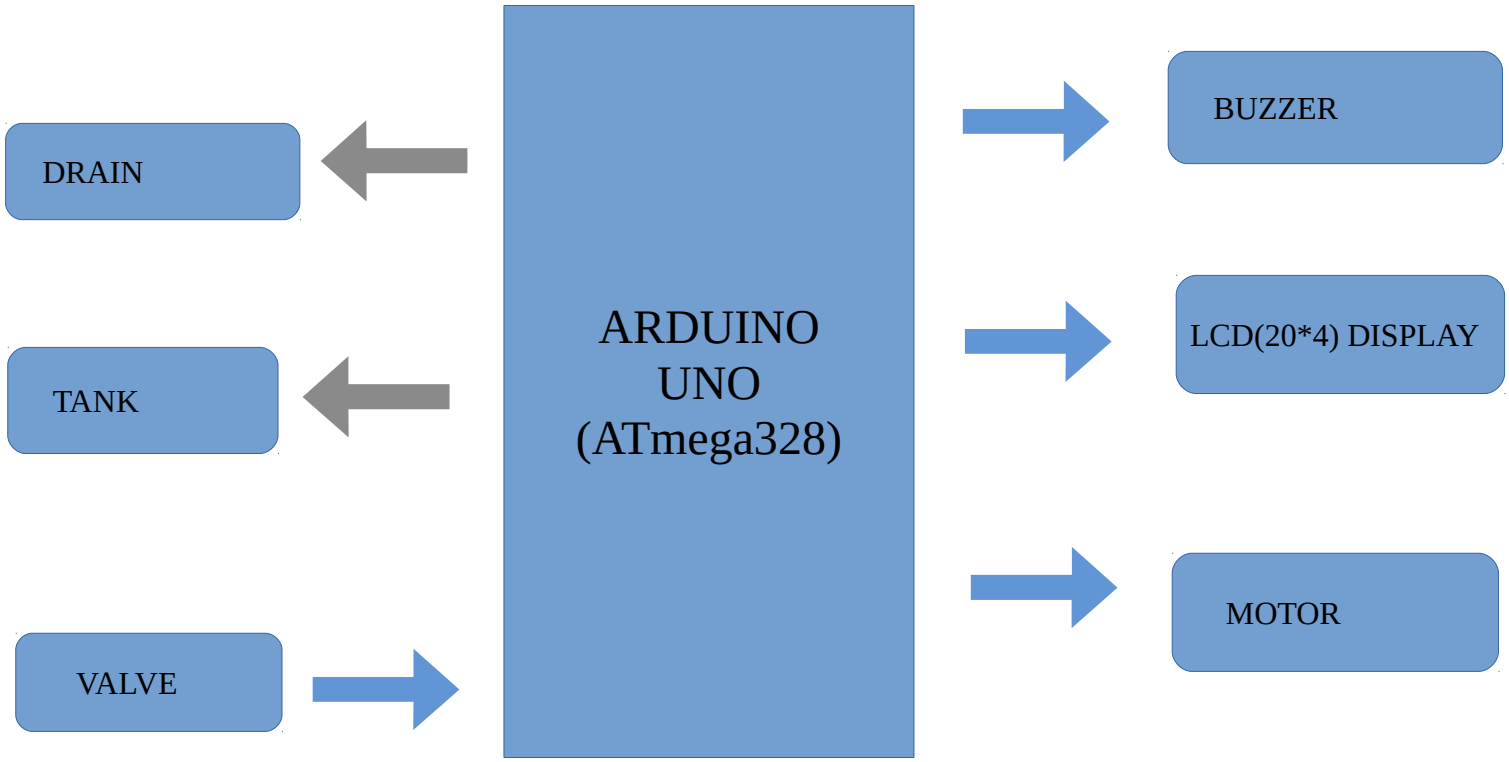
PROJECT NO:-5

AIM:-In this project we are going to design a Washnig machine controller .
Which we required the following requirements.
1).Check for the drain switch is closed or not.If it is open ,wait until all water drains out and then check the empty water tank switch.
2).If water tank is empty then is turn on relay to close the drain valve. After the drain is closed.
3).Ask user to set the washing timer value.
4).Run the washing motor till the timer time elaspe.
5).After completing the washing drain opens and after a few mins drain closes and it beeps indicating that the washing is completed.
6).During water dranning buzzer beeps until the drain valve is again closed.
7).Use a LCD 20*4 based menu to show the machine status ,timers,and settings etc.

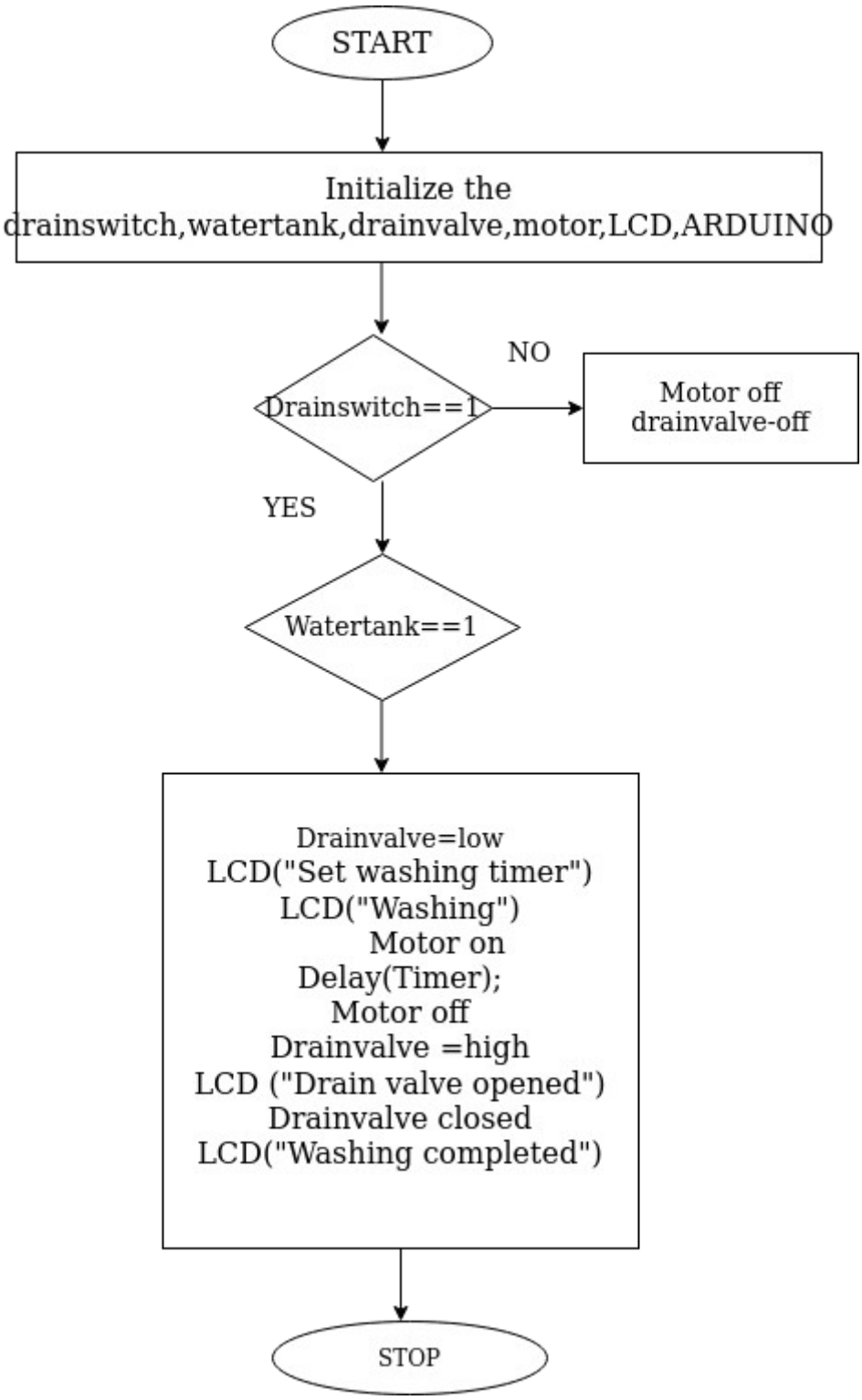
BLOCK DIAGRAM:-



INPUTS AND OUTPUTS TABLE:-

S,NO	DESCRIPTION	NAME	TYPE	DATA DIRECTION	SPECIFICATION
1	Draining	Drain	INPUT	DI	5V DC
2	Water tank	Tank	INPUT	DI	5V DC
3	Drainvalve	valve	OUTPUT	DO	5V DC
4	Buzzer	buzzer	OUTPUT	DO	5V DC
5	LCD	Lcd(20*4)	OUTPUT	DO	5V DC
6	Motor	motor	OUTPUT	DO	NA

FLOW CHART:-



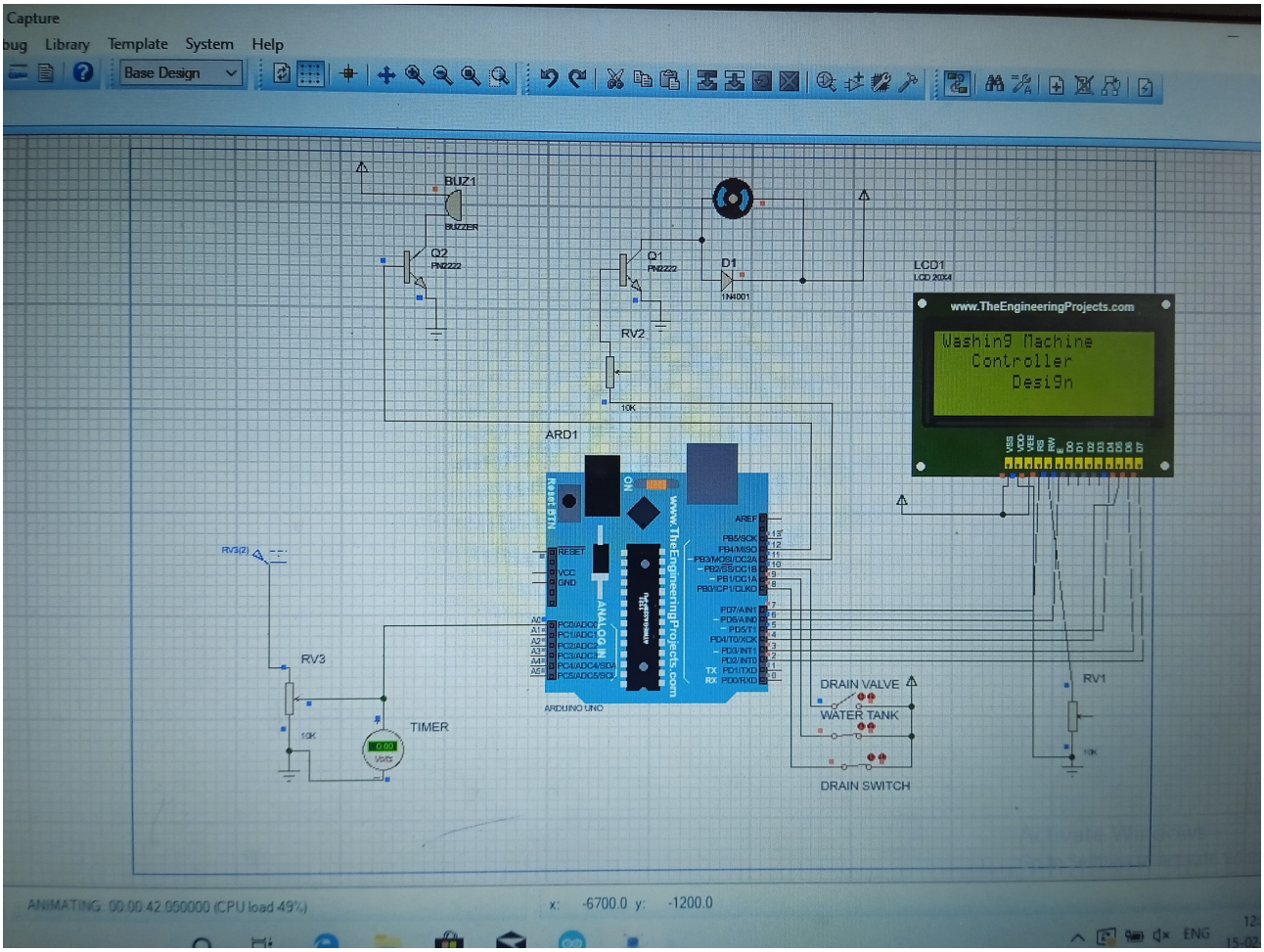
PROGRAM CODE:-

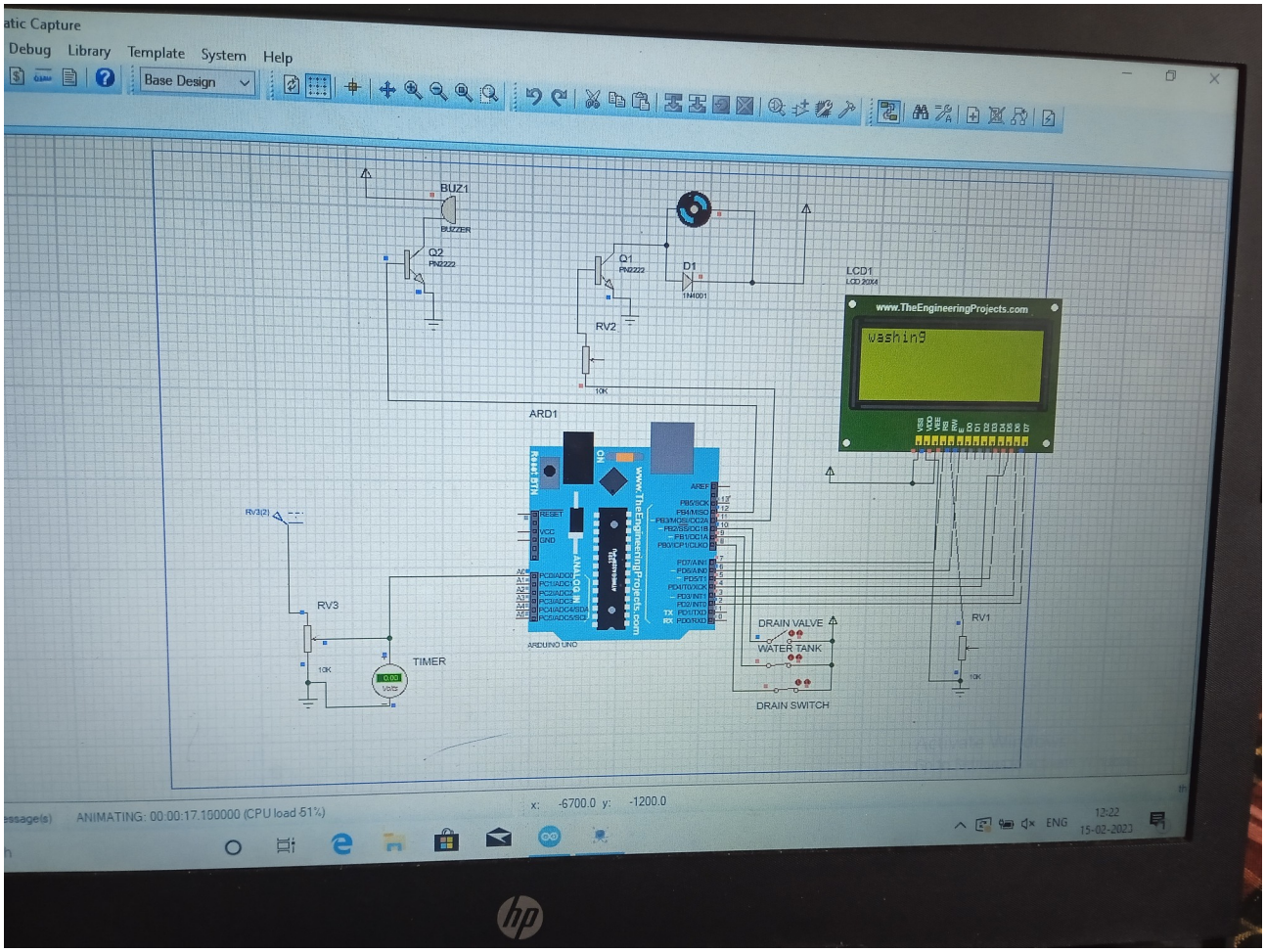
```
#include<LiquidCrystal.h>
const int drainswitch=8;
const int watertank=9;
const int drainvalve=10;
const int washingmotor=11;
```

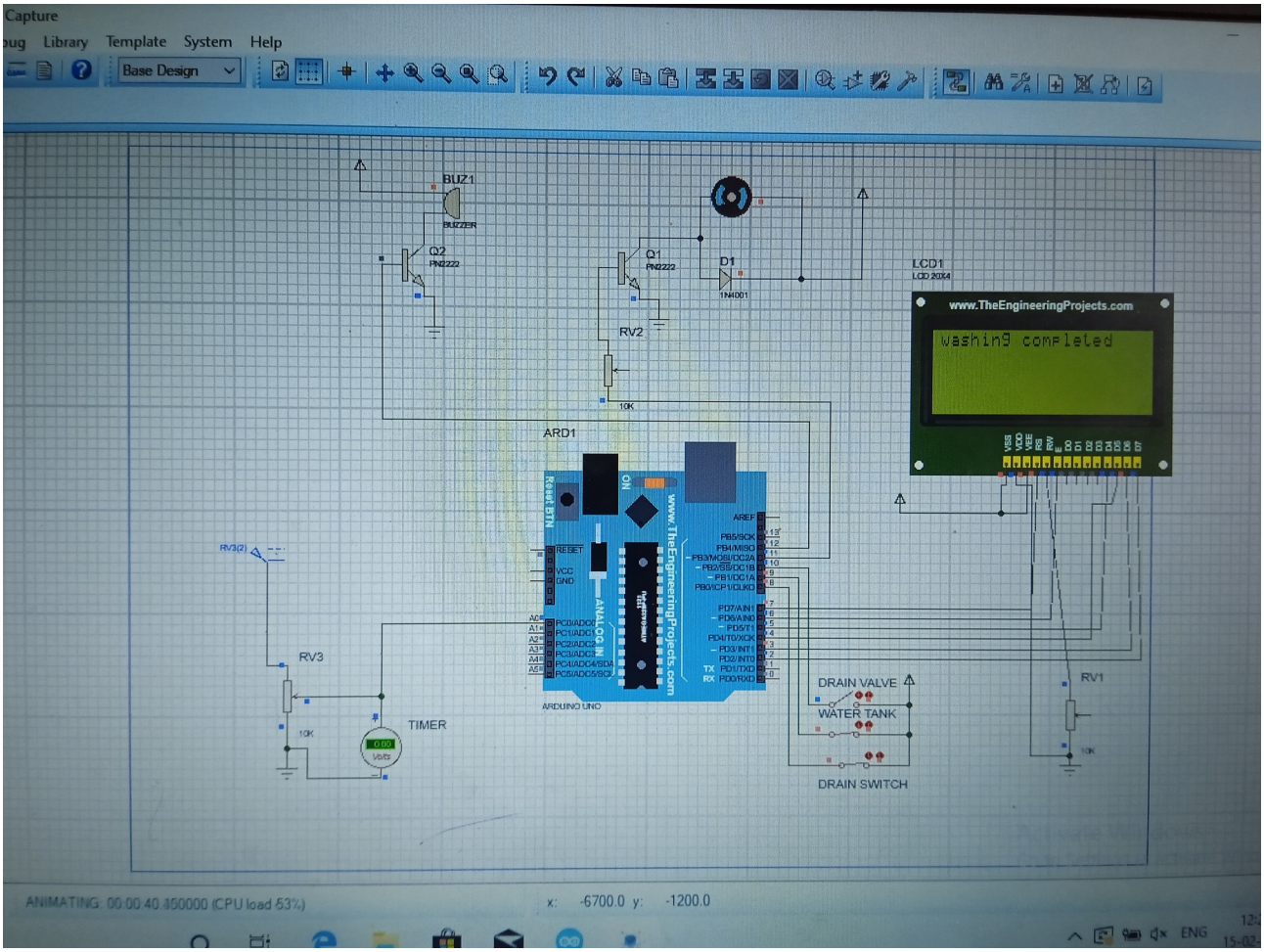
```
const int buzzer=12;
const int timesetting=A0;
const int rs=7,en=6,d4=5,d5=4,d6=3,d7=2;
LiquidCrystal lcd(rs,en,d4,d5,d6,d7);
int timervalue;
void setup(){
  pinMode(drainswitch,INPUT);
  pinMode(watertank,INPUT);
  pinMode(drainvalve,INPUT);
  pinMode(washingmotor,OUTPUT);
  pinMode(buzzer,OUTPUT);
  lcd.begin(20,4);
  lcd.print(" Washing machine ");
  lcd.setCursor(3,1);
  lcd.print(" Controller ");
  lcd.setCursor(6,2);
  lcd.print(" Design ");
  delay(100);
}
void loop(){
  if(digitalRead(drainswitch)==HIGH){
    delay(3000);
    if(digitalRead(watertank)==HIGH){
      digitalWrite(drainvalve,LOW);
      lcd.clear();
      lcd.print(" Drain valve closed ");
      delay(1000);
      lcd.clear();
      lcd.print(" Set washing timer ");
      timervalue=analogRead(timesetting);
      timervalue=map(timervalue,0,1023,0,60);
      lcd.setCursor(0,1);
      lcd.print(timervalue);
      lcd.print(" mins ");
      delay(1000);
```

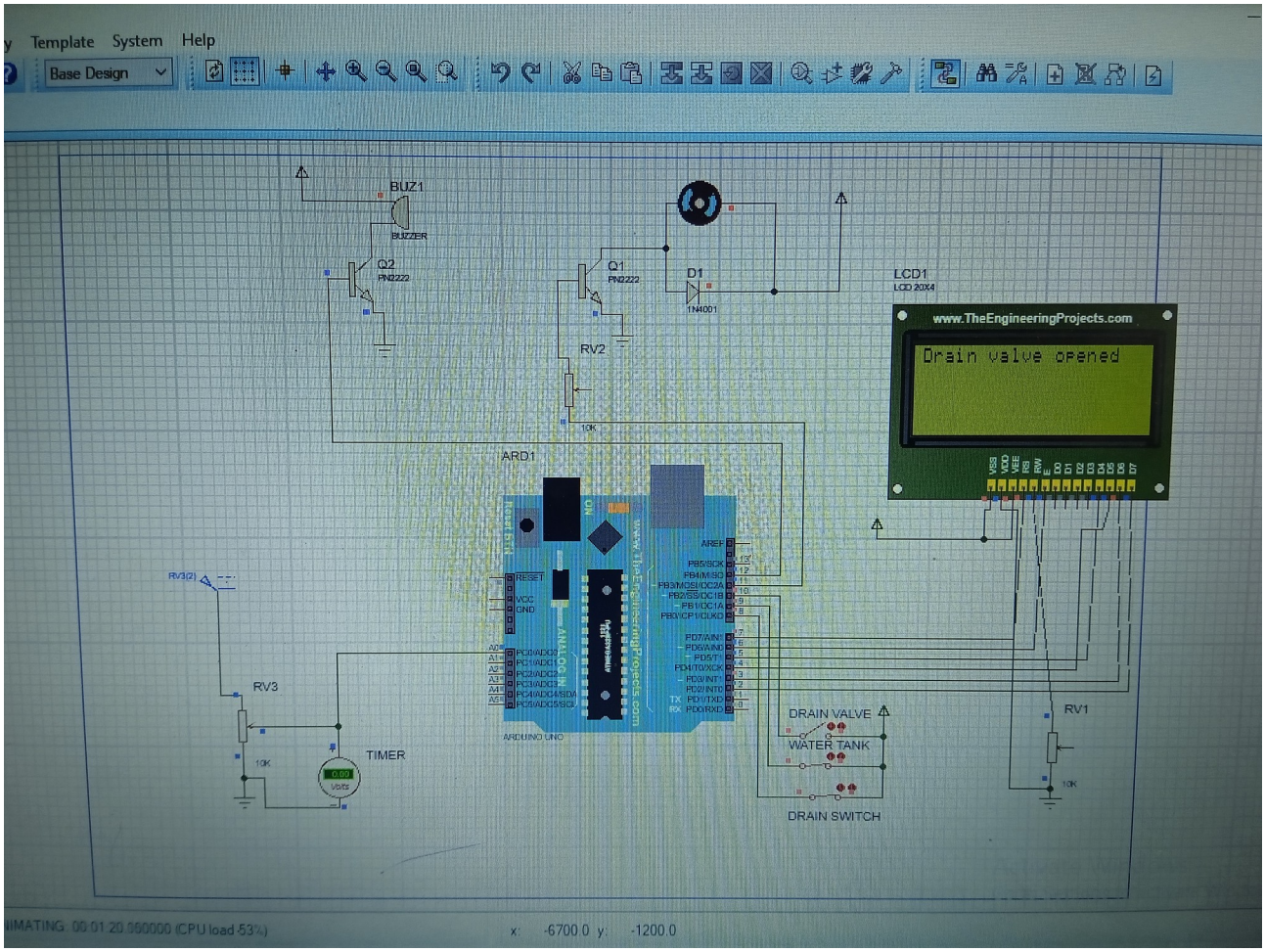
```
      lcd.clear();
      lcd.print(" Washing ");
      digitalWrite(washingmotor,HIGH);
      delay(timervalue*60000);
      digitalWrite(washingmotor,LOW);
      digitalWrite(drainvalve,HIGH);
      lcd.clear();
      lcd.print(" Drain valve opened ");
      delay(3000);
      while(digitalRead(drainswitch)==HIGH){
        digitalWrite(buzzer,HIGH);
        delay(500);
        digitalWrite(buzzer,LOW);
        delay(500);
      }
      digitalWrite(drainvalve,LOW);
      lcd.clear();
      lcd.print(" Washing completed ");
      digitalWrite(buzzer,HIGH);
      delay(1000);
      digitalWrite(buzzer,LOW);
    }
  }
}
```

RESULT/ANALYSIS:-




Debug Library Template System Help
Base Design
BUZ1
BUZZER
Q2
PN2222
Q1
PN2222
D1
1N4001
RV2
10K
LCD1
LCD 20X4
www.TheEngineeringProjects.com
washing
ARD1
RV3(2)
RV3
10K
TIMER
0.00
Volts
DRAIN VALVE
WATER TANK
DRAIN SWITCH
RV1
10K
ANIMATING: 00:00:17.190000 (CPU load 51%)
x: -6700.0 y: -1200.0
ENG
12-22
15-02-2023


Capture
Debug Library Template System Help
Base Design
BUZ1
BUZZER
Q2
PN2222
Q1
PN2222
D1
1N4001
RV2
10K
LCD1
LCD 20X4
www.TheEngineeringProjects.com
washing completed
ARD1
RV3(2)
RV3
10K
TIMER
0.00
Volts
DRAIN VALVE
WATER TANK
DRAIN SWITCH
RV1
10K
ANIMATING: 00:00:40.450000 (CPU load 53%)
x: -6700.0 y: -1200.0
ENG


Template System Help
Base Design
BUZ1
BUZZER
Q2
PN2222
Q1
PN2222
D1
1N4001
RV2
10K
LCD1
LCD 20X4
www.TheEngineeringProjects.com
Drain valve opened
ARD1
RV3(2)
RV3
10K
TIMER
0.00
Volts
DRAIN VALVE
WATER TANK
DRAIN SWITCH
RV1
10K
x: -6700.0 y: -1200.0