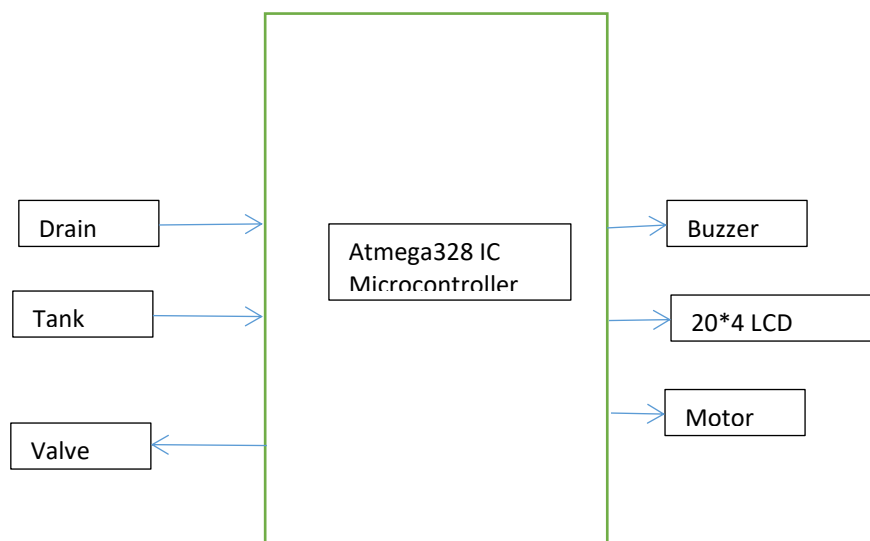


Project 5: Washing Machine Controller Using Arduino Microcontroller

Objective: 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. If water tank is empty then it turns on relay to close the drain valve. After the drain is closed, ask user to set the washing timer value. Run the washing motor till the timer time elapses. After completing the washing, drain opens and after a few mins drain closes and it beeps indicating that the washing is completed. During water draining, buzzer beeps until the drain valve is again closed. Use a 20x4 LCD-based menu to show the machine status, timers setting, etc. Use the Atmega328 IC instead of Arduino board.

Components: Arduino board
Atmega328 IC
20*4 LCD
Buzzer
Motor
Push button

Block Diagram



Input and Output :

s.no.	Discription	Name	Type	Data Direction	Specification	Remarks
1.	Draining	Drain	input	DI	5VDC	
2.	Water-Tank	Tank	input	DI	5VDC	
3.	Drainvalve	valve	Output	DO	5VDC	
4.	Buzzer	buzzer	Output	DO	5VDC	
5.	LCD	20*4 LCD	Output	DO	5VDC	
6.	Motor	Motor	Output	DO	NA	

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 timerSetting = A0;
```

```
LiquidCrystal lcd(7, 6, 5, 4, 3, 2);
```

```
int timerValue;
```

```
void setup() {  
  pinMode(drainSwitch, INPUT);  
  pinMode(waterTank, INPUT);  
  pinMode(drainValve, OUTPUT);  
  pinMode(washingMotor, OUTPUT);  
  pinMode(buzzer, OUTPUT);  
  lcd.begin(20, 4);  
}
```

```
void loop() {  
  // Check for drain switch  
  if (digitalRead(drainSwitch) == HIGH) {  
    // Wait for water to drain out  
    delay(3000);  
    // Check for empty water tank  
    if (digitalRead(waterTank) == HIGH) {  
      // Close drain valve  
      digitalWrite(drainValve, LOW);  
      lcd.clear();  
      lcd.print("Drain valve closed");  
      delay(1000);  
      // Ask for timer setting  
      lcd.clear();  
      lcd.print("Set washing timer:");  
      timerValue = analogRead(timerSetting);  
      // Convert timer value to minutes  
      timerValue = map(timerValue, 0, 1023, 0, 60);  
      lcd.setCursor(0, 1);  
      lcd.print(timerValue);  
    }  
  }  
}
```

```

lcd.print(" mins");
delay(1000);
// Start washing
lcd.clear();
lcd.print("Washing...");
digitalWrite(washingMotor, HIGH);
delay(timerValue * 60000);
digitalWrite(washingMotor, LOW);
// Open drain valve
digitalWrite(drainValve, HIGH);
lcd.clear();
lcd.print("Drain valve opened");
delay(3000);
// Buzzer beeps until drain valve closed
while (digitalRead(drainSwitch) == HIGH) {
    digitalWrite(buzzer, HIGH);
    delay(500);
    digitalWrite(buzzer, LOW);
    delay(500);
}
// Close drain valve and indicate washing completed
digitalWrite(drainValve, LOW);
lcd.clear();
lcd.print("Washing completed!");
digitalWrite(buzzer, HIGH);
delay(1000);
digitalWrite(buzzer, LOW);
}
}
}

```

Circuit&Simulation

