

APPENDIX

//Arduino Source Code

```
#include <SPI.h>

#include <Ethernet.h>

String readString,
readStringTheCommand;

byte mymac[] = { 0x1C, 0xB7, 0x2C, 0xDF, 0xA8, 0x37 };//mac address
byte myip[] = { 192, 168,1,177};//ip arduino
byte server[] = { 192, 168, 1, 20};//ip server/ip xampp laptop
EthernetClient client;//untuk mengeset arduino menjadi klient

int trigPin1 = 2;//untuk Mobil
int echoPin1 = 3;//untuk Mobil
int trigPin2 = 4;//untuk Motor 1
int echoPin2 = 5;//untuk Motor 1
int trigPin3 = 6;//untuk Motor 2
int echoPin3 = 7;//untuk Motor 2

long duration1,duration2,duration3;

int distance1,distance2,distance3;

int tinggi_mobil = 0;

int tinggi_motor1 = 0;

int tinggi_motor2 = 0;

int jumlah_mobil = 0;//untuk Mobil
```

```
int jumlah_motor = 0;//untuk Motor
int jumlah_motor2 = 0;
bool tempHitung1 = false;//untuk Mobil
bool tempHitung2 = false;//untuk Motor 1
bool tempHitung3 = false;//untuk Motor 2
int hitung1 = 0;//untuk Mobil
int hitung2 = 0;//untuk Motor 1
int hitung3 = 0;//untuk Motor 2

int tinggiMin = 10;
int tinggiMax = 260;

void setup()
{
  Serial.begin(9600);

  Ethernet.begin(mymac,myip);//memulai ethernet shield mengambil mymac dan myip

  pinMode (trigPin1, OUTPUT);
  pinMode (echoPin1, INPUT);
  pinMode (trigPin2, OUTPUT);
  pinMode (echoPin2, INPUT);
  pinMode (trigPin3, OUTPUT);
  pinMode (echoPin3, INPUT);
}
```

```
void loop()
{
//----- MOBIL -----

digitalWrite(trigPin1, LOW);
delayMicroseconds(2);

digitalWrite(trigPin1, HIGH);
delayMicroseconds(10);

digitalWrite(trigPin1, LOW);

duration1 = pulseIn(echoPin1, HIGH);

distance1= duration1/58.2;

//----- MOTOR 1 -----

digitalWrite(trigPin2, LOW);
delayMicroseconds(2);

digitalWrite(trigPin2, HIGH);
delayMicroseconds(10);

digitalWrite(trigPin2, LOW);
```

```
duration2 = pulseIn(echoPin2, HIGH);

distance2= duration2/58.2;

//----- MOTOR 2 -----

digitalWrite(trigPin3, LOW);
delayMicroseconds(2);

digitalWrite(trigPin3, HIGH);
delayMicroseconds(10);

digitalWrite(trigPin3, LOW);

duration3 = pulseIn(echoPin3, HIGH);

distance3= duration3/58.2;

Serial.println("-----");
Serial.println("-----");

tinggi_mobil = 200 - distance1;
tinggi_motor1 = 200 - distance2;
tinggi_motor2 = 200 - distance3;

if(tinggi_mobil < 0)
```

```
{
    tinggi_mobil = 0;
}

if(tinggi_motor1 < 0)
{
    tinggi_motor1 = 0;
}

if(tinggi_motor2 < 0)
{
    tinggi_motor2 = 0;
}

Serial.print("tinggi mobil = ");
Serial.println(tinggi_mobil);
Serial.print("tinggi motor 1 = ");
Serial.println(tinggi_motor1);
Serial.print("tinggi motor 2 = ");
Serial.println(tinggi_motor2);

int count = 4; //try 4 times before marked as failed
while(count > 0)
{
    if(client.connect(server, 80))
    {
```

```
Serial.println("connected");

if(tinggi_mobil >= tinggiMin && tinggi_mobil <= tinggiMax)
{
    sendValueMobil(tinggi_mobil);
}

if(tinggi_motor1 >= tinggiMin && tinggi_motor1 <= tinggiMax)
{
    sendValueMotor1(tinggi_motor1);
}

if(tinggi_motor2 >= tinggiMin && tinggi_motor2 <= tinggiMax)
{
    sendValueMotor2(tinggi_motor2);
}

count = -1;
}
else
{
    count--;
    delay(20);
}
}

if(count == 0)
```

```
{  
    //FAILED  
    Serial.println("connection failed");  
}  
  
client.stop();  
client.flush();  
  
delay(900);  
}  
  
int sendValueMobil(int t_mobil)  
{  
    String str1,str2;  
  
    str1 = "GET /CodeExitGate/insert_exit_gate_mobil.php?tinggi_mobil=";  
    str2 = String(t_mobil);  
  
    str1.concat(str2);  
  
    client.println(str1);  
    client.println();  
    client.println();
```

```
    return 1;
}

int sendValueMotor1(int t_motor1)
{
    String str1,str2;

    str1 = "GET /CodeExitGate/insert_exit_gate_motor1.php?tinggi_motor1=";
    str2 = String(t_motor1);

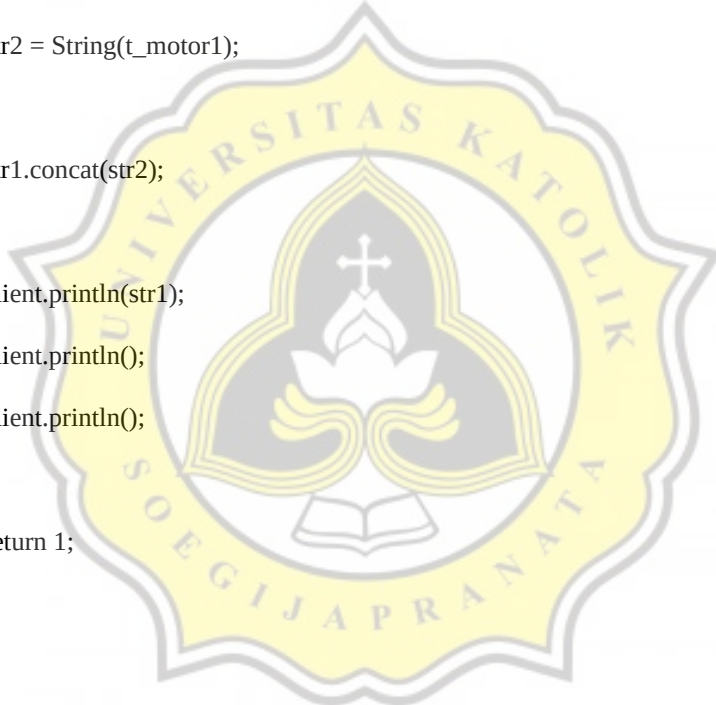
    str1.concat(str2);

    client.println(str1);
    client.println();
    client.println();

    return 1;
}

int sendValueMotor2(int t_motor2)
{
    String str1,str2;

    str1 = "GET /CodeExitGate/insert_exit_gate_motor2.php?tinggi_motor2=";
    str2 = String(t_motor2);
```




```
str1.concat(str2);

client.println(str1);
client.println();
client.println();

return 1;
}

//PHP insert_exit_gate_mobil Source Code
<html>
<body>
<?php
//getting data from client(GET)
if(!empty($_GET['tinggi_mobil']))
{
    $tinggimobil=$_GET['tinggi_mobil'];
}
else
{
    $tinggimobil=0;
}

//connect to database with PDO
$dsn = "mysql:host=127.0.0.1;dbname=dbExitGate";
```

```
$user = "root";

$password = "xyz";

$db = new PDO($dsn,$user,$password);

try
{
    $pdo->beginTransaction();
    $stm = $pdo->exec("INSERT INTO tblExitMobil (waktu, tinggi_mobil)
VALUES (CURRENT_TIMESTAMP, $tinggimobil)");
    $pdo->commit();
}
catch(Exception $e)
{
    $pdo->rollback();
    throw $e;
}

?>

</body>

</html>

//PHP insert_exit_gate_motor1 Source Code

<html>

<body>
```

```
<?php
//getting data from client(GET)
if(!empty($_GET['tinggi_motor1']))
{
    $tinggimotor1=$_GET['tinggi_motor1'];
}
else
{
    $tinggimotor1=0;
}

//connect to database with PDO
$dsn = "mysql:host=127.0.0.1;dbname=dbExitGate";
$user = "root";
$password = "xyz";

$pdo = new PDO($dsn,$user,$password);

try
{
    $pdo->beginTransaction();

    $stm = $pdo->exec("INSERT INTO tblExitMotor1 (waktu, tinggi_motor1)
VALUES (CURRENT_TIMESTAMP, $tinggimotor1)");

    $pdo->commit();
}
}
```

```
catch(Exception $e)
{
    $pdo->rollback();
    throw $e;
}
```

```
?>
```

```
</body>
```

```
</html>
```

```
//PHP insert_exit_gate_motor1 Source Code
```

```
<html>
```

```
<body>
```

```
<?php
```

```
//getting data from client(GET)
```

```
if(!empty($_GET['tinggi_motor2']))
```

```
{
```

```
    $tinggimotor2=$_GET['tinggi_motor2'];
```

```
}
```

```
else
```

```
{
```

```
    $tinggimotor2=0;
```

```
}
```

```
//connect to database with PDO
```

```
$dsn = "mysql:host=127.0.0.1;dbname=dbExitGate";
```

```
$user = "root";
```

```
$passwd = "xyz";
```

```
$pdo = new PDO($dsn,$user,$passwd);
```

```
try
```

```
{
```

```
    $pdo->beginTransaction();
```

```
    $stm = $pdo->exec("INSERT INTO tblExitMotor2 (waktu, tinggi_motor2)
VALUES (CURRENT_TIMESTAMP, $tinggimotor2)");
```

```
    $pdo->commit();
```

```
}
```

```
catch(Exception $e)
```

```
{
```

```
    $pdo->rollback();
```

```
    throw $e;
```

```
}
```

```
?>
```

```
</body>
```

```
</html>
```



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Report #11061122

Introduction BackgroundThe number of vehicles on campus is growing rapidly from year to year. Therefore an up-to-date number of vehicles exiting from campus is required. Vehicles that pass through the campus exit include 2 parts namely the lane for cars and lanes for motorcycles. Vehicles are distinguished by measuring its height. The campus is also a place that contain lands used for parking vehicles. As students who have vehicles parked on campus, they will also spend time searching for vacant parking lots. This data is used to anticipate parking area problem in campus. The data taken is data analysis of each vehicle that leaves the campus. With the type of car and motorcycle as the object of data retrieval. Thus the data that has been detected by Ultrasonic sensors and sent to the database. In this project/research a system is made to count the number of vehicles exiting from the campus using arduino UNO and ultrasonic sensor. This system is using Ultrasonic sensor to calculate an object height passing through the exit gate and determine it as a vehicle or not. This system is used to anticipate the rapid growth of vehicle happening in a campus. **Problem Formulation** 1. Can the system determine a vehicle through its height? 2. Can the system determine two vehicle passing through at the same time? 3. Can the system determine the same type vehicle but with different height? **Scope**The