

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation

This project uses the Arduino IDE programming language which has a C programming language base. The processing uses a combination of C ++ and Java. This software can be installed on all operating systems. This software consists of 3 parts, namely Edit, Compile and Upload.

First we set the address to wire.h because we are using the wire.h library and configure mpu6050 with object name accelgyro with address i2c 0x68 MPU6050 accelgyro(0x68)

```
1. #if I2CDEV_IMPLEMENTATION ==  
I2CDEV_ARDUINO_WIRE  
2.   #include "Wire.h"  
#endif  
3. MPU6050 accelgyro(0x68);
```

enter variable accelero, gyroscope.

```
4. int16_t ax, ay, az; // variable accelero  
5. int16_t gx, gy, gz; // variable gyro  
6. int16_t peak_ax, peak_ay; // variable nilai puncak  
accelero  
7. int16_t peak_gx, peak_gy; // variable nilai puncak gyro  
then initialize the serial port with a bolt rate of 9600 bits/seconds because  
it cannot join automatically and join the I2c bus address.  
8. void setup() {  
9. Serial.begin(9600); // inisialisasi serial port dengan  
baud rate 9600 bit/seconds  
  
10. #if I2CDEV_IMPLEMENTATION == I2CDEV_ARDUINO_WIRE  
Wire.begin();
```

```

11. #elif I2CDEV_IMPLEMENTATION == I2CDEV_BUILTIN_FASTWIRE
        Fastwire::setup(400, true);
    #endif

```

Initially the accelero and gyro sensor worked properly. If had no problem, the buzzer will sound a few seconds to give a sign the device is ready to use.

```

12. accelgyro.initialize();

13. Serial.println("READY"); // tampilan ready

14. pinMode(buzzer,OUTPUT); // inisialisasi buzzer
15. digitalWrite(buzzer,HIGH); // buzzer on
16. delay(500); // jeda 0.5 detik
17. digitalWrite(buzzer,LOW); // buzzer off

```

the variable that functions for the timer takes the peak value of the sensor and the timer to process the output algorithm

```

18. unsigned long previousMillis = 0; // variabel
penampung timer untuk mengambil nilai puncak sensor
19. unsigned long previousMillis1 = 0; // variable
penampung timer untuk pengolah algoritma output
20. int set_timer=5; // set lamanya buzzer on
21. int timer=set_timer; // variable timer untuk buzzer

```

To read data from accelero and gyroscope sensor

```

22. void loop() {
23. accelgyro.getAcceleration(&ax, &ay, &az); // baca
sensor accelero
24. accelgyro.getRotation(&gt, &gx, &gz); // baca sensor
gyro

25. unsigned long currentMillis = millis(); // running
timer

```

The Complementary Filter formula to insert data so that data can be processed which will later get more accurate data and reduce existing noise.

```
26. roll = (accRoll * W1 + gyrRoll*W2)/(W1+W2);
27. pitch = accPitch *W1 + gyro Pitch*W2/(W1+W2);
```

Logic Condition if when lying down is detected

```
28. if(peak_ax>15000) { // jika miring ke belakang
29. if(peak_gx<-25000) {Serial.print("Terjatuh
");digitalWrite(buzzer,HIGH);timer=0;} // kondisi jika
terdeteksi terjatuh akan menyalakan buzzer dan menampilkan
kondisi terjatuh serta mereset timer buzzer
30. Serial.print("Berbaring"); // output berbaring
```

Logic Condition if when pronen is detected

```
31. if(peak_ax<-15000) { // jika miring ke depan
32. ifpeak_gx>25000) {Serial.print("Terjatuh
");digitalWrite(buzzer,HIGH);timer=0;} // kondisi jika
terdeteksi terjatuh akan menyalakan buzzer dan menampilkan
kondisi terjatuh serta mereset timer buzzer
33. Serial.print("Tengkurap"); // output tengkurap
}
}
```

Logic Condition if when right tilted is detected

```
34. if(peak_ay>15000||peak_ay<-15000){ // kondisi
terdeteksi kemiringan ke kanan / kiri

35. if(peak_ay>15000) { // jika miring ke kanan
if(peak_gy>25000) {Serial.print("Terjatuh
");digitalWrite(buzzer,HIGH);timer=0;} // kondisi jika terdeteksi
terjatuh akan menyalakan buzzer dan menampilkan kondisi terjatuh
serta mereset timer buzzer

36. Serial.print("Miring Kanan"); // output kanan
```

Logic Condition if when right tilted is detected

```
37. if(peak_ay<-15000) { // jika miring ke kiri
    38.if(peak_gy<-25000) {Serial.print("Terjatuh
");digitalWrite(buzzer,HIGH);timer=0;} // kondisi jika
terdeteksi terjatuh akan menyalakan buzzer dan menampilkan
kondisi terjatuh serta mereset timer buzzer
    39. Serial.print("Miring Kiri"); // output kiri
        }
    }
}
```

To reset all threshold value and to set timer for buzzer

```
// reset semua nilai puncak
peak_ax=0;
peak_ay=0;
peak_gx=0;
peak_gy=0;

40. if(timer<set_timer) timer; // timer buzzer
menghitung
41. else digitalWrite(buzzer,LOW); // jika timer terpenuhi
buzzer off
```

The Logic condition if the gd value is detected increases drastically

```
42. if(gx>20000||gx<-20000){ // kondisi jika terdeteksi
nilai gd naik drastis
43. if(peak_gx<gx)peak_gx=gx; // ambil nilai puncak -gx
44. if(peak_gx>gx)peak_gx=gx; // ambil nilai puncak gx
    }

45. if(gy>20000 by<-20000){ // kondisi jika terdeteksi
nilai gd naik drastis
46. if(peak_gy<gy)peak_gy=gy; // ambil nilai puncak -gy
47. if(peak_gy>gy)peak_gy=gy; // ambil nilai puncak gy
```

To Display in the serial monitor Ax and Ay Data output.

```
// tampilan ax dan ay
48. Serial.print("ax: ");Serial.print(ax);
49. Serial.print(" ay: "); Serial.print(ay);
// tampilan gx dan gy
50. Serial.print(" gx: ");Serial.print(gx);
51. Serial.print(" gy: "); Serial.print(gy);
// enter
52. Serial.println();
```

5.2 Testing

Table Analysis Data 1

| Position | X | Y | Z |
|--------------|--------|--------|-----|
| Berbaring | 16300 | -540 | 522 |
| Tengkurap | -15564 | -332 | 506 |
| Miring Kiri | 2080 | -16192 | 416 |
| Miring Kanan | 3352 | 15903 | 313 |

```
21:30:44.076 -> ax: 2184 ay: -16292 gx: -242 gy: -166
21:30:44.110 -> ax: 2264 ay: -15984 gx: 681 gy: 57
21:30:44.143 -> ax: 2040 ay: -16104 gx: 1392 gy: 401
21:30:44.209 -> ax: 2176 ay: -16864 gx: 672 gy: 204
21:30:44.243 -> ax: 2184 ay: -16268 gx: 566 gy: 102
21:30:44.276 -> ax: 1916 ay: -16144 gx: 532 gy: 158
21:30:44.309 -> ax: 2256 ay: -16404 gx: 563 gy: 363
21:30:44.343 -> ax: 2428 ay: -16316 gx: 1377 gy: 159
21:30:44.376 -> Miring Kiri: ax: 2080 ay: -16192 gx: 416 gy: -59
21:30:44.443 -> ax: 2276 ay: -16480 gx: 756 gy: -59
21:30:44.477 -> ax: 2296 ay: -16284 gx: 619 gy: 115
21:30:44.510 -> ax: 2352 ay: -16020 gx: 1014 gy: 174
21:30:44.543 -> ax: 2284 ay: -15908 gx: 221 gy: -35
21:30:44.610 -> ax: 2512 ay: -16160 gx: 571 gy: 51
21:30:44.643 -> ax: 2668 ay: -16324 gx: 1025 gy: 182
```

Saat terdeteksi miring kiri nilai y -16192

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Saat tengkurap

/dev/ttyUSB0

```

22:22:51.866 -> ax: -16180 ay: 1868 gx: 468 gy: 127
22:22:51.888 -> ax: -16164 ay: 1832 gx: 469 gy: 118
22:22:51.118 -> ax: -16424 ay: 1920 gx: 448 gy: 108
22:22:51.185 -> ax: -16212 ay: 1904 gx: 468 gy: 131
22:22:51.185 -> ax: -16148 ay: 1928 gx: 436 gy: 128
22:22:51.218 -> ax: -16216 ay: 1876 gx: 480 gy: 122
22:22:51.263 -> ax: -16164 ay: 1988 gx: 478 gy: 119
22:22:51.318 -> ax: -16196 ay: 2048 gx: 488 gy: 114
22:22:51.384 -> ax: -16884 ay: 1972 gx: 491 gy: 142
22:22:51.384 -> ax: -16272 ay: 1968 gx: 441 gy: 130
22:22:51.417 -> ax: -16124 ay: 1928 gx: 437 gy: 126
22:22:51.463 -> ax: -16212 ay: 1896 gx: 466 gy: 109
22:22:51.517 -> ax: -16144 ay: 1940 gx: 452 gy: 112
22:22:51.583 -> ax: -16136 ay: 1916 gx: 451 gy: 118
22:22:51.616 -> ax: -16192 ay: 2000 gx: 438 gy: 115
22:22:51.649 -> ax: -16232 ay: 1936 gx: 461 gy: 129
22:22:51.683 -> ax: -16120 ay: 1984 gx: 473 gy: 114
22:22:51.716 -> ax: -16208 ay: 1868 gx: 442 gy: 120
22:22:51.783 -> ax: -16084 ay: 1940 gx: 445 gy: 105
22:22:51.816 -> ax: -16188 ay: 1864 gx: 446 gy: 125
22:22:51.849 -> ax: -16116 ay: 1912 gx: 474 gx: 109
22:22:51.882 -> ax: -16224 ay: 1884 gx: 480 gy: 124
22:22:51.915 -> ax: -16188 ay: 1940 gx: 468 gy: 132
22:22:51.949 -> ax: -16148 ay: 1888 gx: 444 gx: 124
22:22:52.015 -> ax: -16136 ay: 1924 gx: 444 gx: 108
22:22:52.049 -> ax: -16196 ay: 1952 gx: 445 gy: 117
22:22:52.082 -> ax: -15948 ay: 1976 gx: 438 gy: 108
22:22:52.115 -> ax: -16088 ay: 1948 gx: 488 gy: 135
22:22:52.148 -> ax: -16196 ay: 1984 gx: 469 gy: 134
22:22:52.181 -> ax: -16172 ay: 1928 gx: 482 gy: 130
22:22:52.248 -> ax: -16128 ay: 1932 gx: 448 gy: 110
22:22:52.281 -> ax: -16224 ay: 1868 gx: 446 gy: 126

```

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Saat miring kiri

/dev/ttyUSB0

```

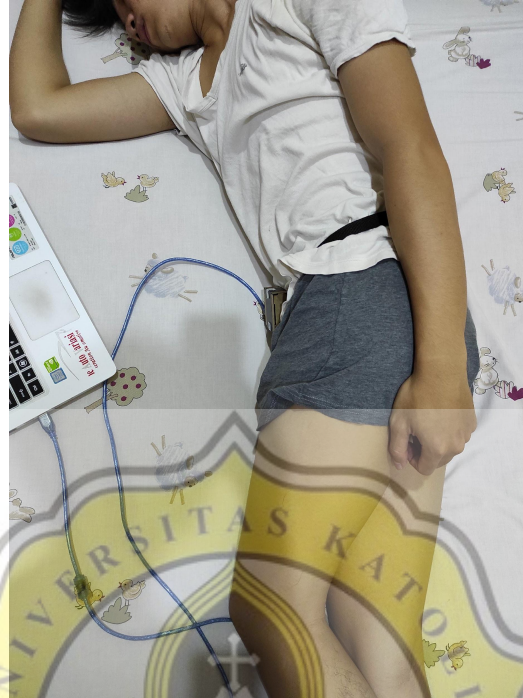
22:25:27.391 -> ax: -5732 ay: -1508 gx: 584 gy: 241
22:25:27.394 -> ax: -6088 ay: -15228 gx: 544 gy: -189
22:25:27.427 -> ax: -5952 ay: -15392 gx: 633 gy: -164
22:25:27.460 -> ax: -5784 ay: -15584 gx: 378 gy: -177
22:25:27.527 -> ax: -5796 ay: -15244 gx: 795 gy: 166
22:25:27.560 -> ax: -5656 ay: -15244 gx: 558 gy: 267
22:25:27.593 -> ax: -5984 ay: -15528 gx: 546 gy: 152
22:25:27.627 -> ax: -5888 ay: -15356 gx: 586 gy: 146
22:25:27.660 -> ax: -5820 ay: -15488 gx: 431 gy: 69
22:25:27.726 -> ax: -5948 ay: -15212 gx: 492 gy: 120
22:25:27.760 -> ax: -5848 ay: -15252 gx: 512 gy: 95
22:25:27.793 -> ax: -6056 ay: -15192 gx: 586 gy: 181
22:25:27.826 -> ax: -5888 ay: -15672 gx: 352 gy: -65
22:25:27.860 -> ax: -5848 ay: -15256 gx: 548 gy: 217
22:25:27.893 -> ax: -6076 ay: -15348 gx: 439 gy: 1
22:25:27.959 -> ax: -5776 ay: -15484 gx: 373 gy: 94
22:25:27.993 -> ax: -6152 ay: -15208 gx: 528 gy: 176
22:25:28.026 -> ax: -5924 ay: -15220 gx: 513 gy: 142
22:25:28.059 -> ax: -5740 ay: -15568 gx: 487 gy: 88
22:25:28.093 -> ax: -5984 ay: -15384 gx: 428 gy: 158
22:25:28.126 -> ax: -6020 ay: -15320 gx: 358 gy: 35
22:25:28.192 -> ax: -5816 ay: -15356 gx: 435 gy: 211
22:25:28.226 -> ax: -6104 ay: -15372 gx: 508 gy: 100
22:25:28.259 -> ax: -6064 ay: -15608 gx: 556 gy: 169
22:25:28.325 -> ax: -6092 ay: -15732 gx: 580 gy: 90
22:25:28.359 -> ax: -6016 ay: -15356 gx: 623 gy: 283
22:25:28.392 -> ax: -6120 ay: -15108 gx: 481 gy: 113
22:25:28.425 -> ax: -5796 ay: -15416 gx: 428 gy: 62
22:25:28.458 -> ax: -6036 ay: -15252 gx: 549 gy: 156
22:25:28.492 -> ax: -6140 ay: -15312 gx: 473 gy: -7
22:25:28.558 -> ax: -6088 ay: -15388 gx: 447 gy: 82

```




Lying Down





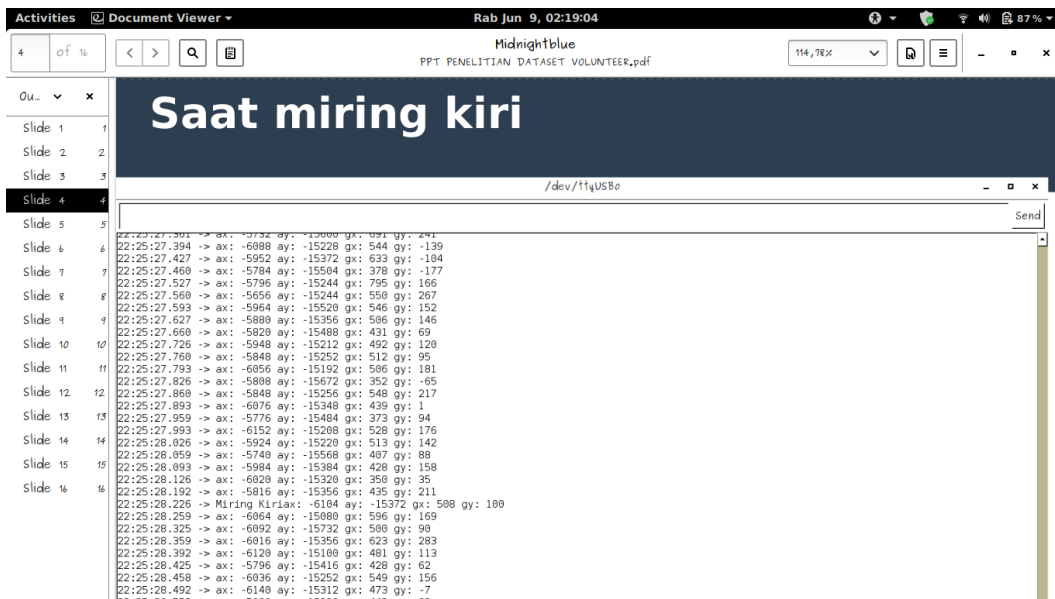
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Prone

Table Analysis Data 2

| Position | X | Y | Z |
|--------------|--------|--------|------|
| Berbaring | 16076 | -660 | -445 |
| Tengkurap | -15834 | -378 | 607 |
| Miring Kiri | -6014 | -15372 | 588 |
| Miring Kanan | 6736 | 14024 | 390 |



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Saat miring kanan

/dev/ttyUSB0

```

21:24:06.212 -> ax: 2632 ay: 13310 gx: -1031 gy: -147
21:24:06.282 -> ax: 6564 ay: 15828 gx: -1514 gy: 1373
21:24:06.315 -> ax: 4768 ay: 14732 gx: -434 gy: 967
21:24:06.348 -> ax: 5884 ay: 15056 gx: 898 gy: -286
21:24:06.381 -> ax: 6252 ay: 15140 gx: 147 gy: -258
21:24:06.414 -> ax: 6080 ay: 14976 gx: 967 gy: 162
21:24:06.447 -> ax: 6384 ay: 14684 gx: 2838 gy: 382
21:24:06.514 -> ax: 5896 ay: 15644 gx: 1466 gy: 1875
21:24:06.547 -> ax: 5840 ay: 15416 gx: 688 gy: 989
21:24:06.581 -> ax: 6888 ay: 14488 gx: 2471 gy: 376
21:24:06.614 -> Miring Kananax: 6736 ay: 14624 gx: 398 gy: 242
21:24:06.648 -> ax: 6948 ay: 14132 gx: 294 gy: 13
21:24:06.715 -> ax: 7188 ay: 14520 gx: -1 gy: -323
21:24:06.748 -> ax: 6564 ay: 14492 gx: -183 gy: -624
21:24:06.782 -> ax: 6852 ay: 14432 gx: -437 gy: -834
21:24:06.815 -> ax: 6596 ay: 14644 gx: -1648 gy: -712
21:24:06.848 -> ax: 6212 ay: 15188 gx: -1810 gy: -315
21:24:06.915 -> ax: 5988 ay: 15596 gx: -894 gy: 287
21:24:06.948 -> ax: 5368 ay: 15148 gx: -639 gy: 157
21:24:06.981 -> ax: 5568 ay: 15012 gx: 1882 gy: -126
21:24:07.015 -> ax: 5788 ay: 14936 gx: 1115 gy: -165
21:24:07.048 -> ax: 5672 ay: 15188 gx: 1365 gy: 39
21:24:07.081 -> ax: 5796 ay: 15324 gx: 1688 gy: 195
21:24:07.115 -> ax: 5884 ay: 15384 gx: 1820 gy: 264
21:24:07.181 -> ax: 5948 ay: 15932 gx: 2241 gy: 162
21:24:07.214 -> ax: 6812 ay: 15236 gx: 2495 gy: 64
21:24:07.247 -> ax: 6284 ay: 14932 gx: 2785 gy: -25
21:24:07.281 -> ax: 6388 ay: 14548 gx: 2783 gy: 57
21:24:07.314 -> ax: 6888 ay: 14788 gx: 2185 gy: 27
21:24:07.347 -> ax: 6356 ay: 14288 gx: 1786 gy: 149
21:24:07.380 -> ax: 7888 ay: 14248 gx: 1347 gy: 94

```

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Saat miring kiri

/dev/ttyUSB0

```

22:25:27.391 -> ax: 6732 ay: -13880 gx: 891 gy: 241
22:25:27.394 -> ax: -6888 ay: -15228 gx: 544 gy: -139
22:25:27.427 -> ax: -5952 ay: -15372 gx: 639 gy: -184
22:25:27.460 -> ax: 5784 ay: -15584 gx: 978 gy: -177
22:25:27.527 -> ax: 5796 ay: -15944 gx: 756 gy: 165
22:25:27.560 -> ax: -5656 ay: -15244 gx: 550 gy: 267
22:25:27.593 -> ax: -5964 ay: -15520 gx: 546 gy: 152
22:25:27.627 -> ax: -5880 ay: -15356 gx: 586 gy: 146
22:25:27.660 -> ax: -5828 ay: -15488 gx: 431 gy: 89
22:25:27.726 -> ax: -5848 ay: -15212 gx: 492 gy: 128
22:25:27.760 -> ax: -5848 ay: -15252 gx: 512 gy: 95
22:25:27.793 -> ax: -6056 ay: -15192 gx: 586 gy: 181
22:25:27.826 -> ax: -5888 ay: -15672 gx: 352 gy: -85
22:25:27.860 -> ax: -5848 ay: -15256 gx: 548 gy: 217
22:25:27.893 -> ax: -6076 ay: -15348 gx: 439 gy: 1
22:25:27.959 -> ax: -5776 ay: -15484 gx: 373 gy: 94
22:25:27.993 -> ax: -6152 ay: -15288 gx: 528 gy: 176
22:25:28.026 -> ax: -5924 ay: -15220 gx: 513 gy: 142
22:25:28.059 -> ax: -5740 ay: -15568 gx: 487 gy: 88
22:25:28.093 -> ax: -5984 ay: -15384 gx: 428 gy: 158
22:25:28.126 -> ax: -6028 ay: -15328 gx: 358 gy: 35
22:25:28.182 -> ax: -5816 ay: -15356 gx: 436 gy: 211
22:25:28.226 -> Miring Kiri: -6104 ay: -15372 gx: 588 gy: 180
22:25:28.259 -> ax: -6064 ay: -15680 gx: 596 gy: 169
22:25:28.325 -> ax: -6092 ay: -15732 gx: 588 gy: 99
22:25:28.359 -> ax: -6016 ay: -15356 gx: 623 gy: 283
22:25:28.392 -> ax: -6128 ay: -15188 gx: 481 gy: 113
22:25:28.425 -> ax: -5796 ay: -15416 gx: 428 gy: 62
22:25:28.458 -> ax: -6036 ay: -15252 gx: 549 gy: 156
22:25:28.492 -> ax: -6148 ay: -15312 gx: 473 gy: -7
22:25:28.558 -> ax: -6088 ay: -15388 gx: 445 gy: 82

```

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Saat tengkurap

```

/dev/ttqUS8o
22:22:51.065 -> ax: -16204 ay: 1916 gx: 401 gy: 119
22:22:51.066 -> ax: -16188 ay: 1860 gx: 468 gy: 127
22:22:51.088 -> ax: -16164 ay: 1832 gx: 469 gy: 118
22:22:51.118 -> ax: -16424 ay: 1920 gx: 448 gy: 158
22:22:51.185 -> ax: -16212 ay: 1904 gx: 468 gy: 131
22:22:51.185 -> ax: -16148 ay: 1920 gx: 436 gy: 128
22:22:51.218 -> ax: -16216 ay: 1876 gx: 488 gy: 122
22:22:51.263 -> ax: -16164 ay: 1908 gx: 478 gy: 119
22:22:51.318 -> ax: -16196 ay: 2048 gx: 488 gy: 114
22:22:51.384 -> ax: -16984 ay: 1972 gx: 491 gy: 142
22:22:51.384 -> ax: -16272 ay: 1960 gx: 441 gy: 130
22:22:51.417 -> ax: -16124 ay: 1920 gx: 437 gy: 126
22:22:51.483 -> ax: -16212 ay: 1896 gx: 466 gy: 109
22:22:51.517 -> ax: -16144 ay: 1940 gx: 452 gy: 112
22:22:51.583 -> ax: -16136 ay: 1916 gx: 451 gy: 118
22:22:51.616 -> ax: -16192 ay: 2000 gx: 439 gy: 115
22:22:51.649 -> ax: -16232 ay: 1936 gx: 461 gy: 128
22:22:51.683 -> ax: -16148 ay: 1904 gx: 473 gy: 114
22:22:51.716 -> ax: -16208 ay: 1868 gx: 442 gy: 120
22:22:51.783 -> ax: -16084 ay: 1848 gx: 446 gy: 105
22:22:51.816 -> ax: -16188 ay: 1864 gx: 446 gy: 125
22:22:51.849 -> ax: -16188 ay: 1916 gx: 474 gy: 109
22:22:51.882 -> ax: -16224 ay: 1884 gx: 488 gy: 124
22:22:51.915 -> ax: -16192 ay: 1948 gx: 468 gy: 132
22:22:51.949 -> ax: -16148 ay: 1880 gx: 444 gy: 124
22:22:52.019 -> ax: -16136 ay: 1928 gx: 444 gy: 108
22:22:52.048 -> ax: -16196 ay: 1892 gx: 445 gy: 117
22:22:52.082 -> ax: -15940 ay: 1976 gx: 438 gy: 108
22:22:52.115 -> ax: -16088 ay: 1940 gx: 469 gy: 135
22:22:52.148 -> ax: -16196 ay: 1936 gx: 469 gy: 134
22:22:52.181 -> ax: -16172 ay: 1920 gx: 462 gy: 139
22:22:52.214 -> ax: -16120 ay: 1852 gx: 446 gy: 110
22:22:52.231 -> ax: -16220 ay: 1860 gx: 446 gy: 126

```



Lying Down



Tilted Left



Tilted Right

Table Analysis Data 3

| Position | X | Y | Z |
|--------------|--------|--------|-----|
| Berbaring | 16920 | -540 | 506 |
| Tengkurap | -16256 | 963 | 445 |
| Miring Kiri | 6868 | -15848 | 381 |
| Miring Kanan | 6020 | 15072 | 200 |



Saat berbaring

```
/dev/ttyUSB0  
Send  
22:35:30.300 -> ax: 13192 ay: 4530 gx: -2730 gy: -340  
22:35:30.333 -> ax: 14656 ay: 3836 gx: -4616 gy: 985  
22:35:30.366 -> ax: 15876 ay: 1412 gx: -5541 gy: -447  
22:35:30.432 -> ax: 15136 ay: 1752 gx: -6162 gy: 737  
22:35:30.466 -> ax: 15632 ay: -3168 gx: -6313 gy: 3353  
22:35:30.499 -> ax: 15388 ay: -3112 gx: -4837 gy: 3915  
22:35:30.532 -> ax: 16348 ay: -3392 gx: -1965 gy: 2315  
22:35:30.566 -> ax: 16568 ay: -2932 gx: -2324 gy: 2133  
22:35:30.632 -> ax: 16728 ay: -2128 gx: -1258 gy: 1529  
22:35:30.666 -> ax: 18488 ay: -2828 gx: -1702 gy: 1676  
22:35:30.699 -> ax: 16736 ay: -2184 gx: -4231 gy: 1448  
22:35:30.732 -> ax: 16632 ay: -1996 gx: -4190 gy: 3850  
22:35:30.799 -> ax: 17756 ay: -2824 gx: -3895 gy: 4814  
22:35:30.832 -> ax: 14876 ay: -2732 gx: -5128 gy: 3583  
22:35:30.865 -> ax: 14884 ay: -2632 gx: -2055 gy: 2990  
22:35:30.898 -> ax: 12672 ay: -5248 gx: 59 gy: 724  
22:35:30.965 -> ax: 13752 ay: -6388 gx: 811 gy: 274  
22:35:30.998 -> ax: 16968 ay: -7676 gx: -128 gy: 72  
22:35:31.031 -> ax: 15816 ay: -5172 gx: -1118 gy: -1659  
22:35:31.064 -> ax: 14428 ay: -2328 gx: 1770 gy: -2950  
22:35:31.098 -> ax: 17648 ay: -944 gx: 2115 gy: -2291  
22:35:31.164 -> ax: 17548 ay: 824 gx: 1446 gy: -367  
22:35:31.197 -> ax: 17564 ay: -872 gx: 1098 gy: 688  
22:35:31.230 -> Berbaringax: 16920 ay: -548 gx: 586 gy: -77  
22:35:31.264 -> ax: 16896 ay: -2556 gx: -413 gy: 131  
22:35:31.330 -> ax: 16824 ay: -3588 gx: 5 gy: -718  
22:35:31.363 -> ax: 14956 ay: -3492 gx: -284 gy: -1244  
22:35:31.396 -> ax: 15988 ay: -3828 gx: -873 gy: -463  
22:35:31.430 -> ax: 15828 ay: -3336 gx: 583 gy: -184  
22:35:31.463 -> ax: 15976 ay: -2652 gx: 588 gy: 852  
22:35:31.496 -> ax: 16324 ay: -2832 gx: 858 gy: 213  
22:35:31.562 -> ax: 16448 ay: -1984 gx: 1332 gy: 951  
22:35:31.666 -> ax: 16376 ay: -1488 gx: 811 gy: 108
```

Saat tengkurap

```
/dev/ttyUSB0  
Send  
2:36:44.224 -> ax: -16222 ay: 948 gx: 482 gy: 122  
2:36:44.321 -> ax: -16236 ay: 948 gx: 482 gy: 128  
2:36:44.354 -> ax: -16220 ay: 912 gx: 587 gy: 115  
2:36:44.387 -> ax: -16256 ay: 948 gx: 488 gy: 108  
2:36:44.421 -> ax: -16248 ay: 896 gx: 471 gy: 117  
2:36:44.454 -> ax: -16276 ay: 864 gx: 518 gy: 181  
2:36:44.487 -> ax: -16248 ay: 948 gx: 476 gy: 111  
2:36:44.520 -> ax: -16388 ay: 912 gx: 581 gy: 138  
2:36:44.554 -> Tengkurapax: -16256 ay: 968 gx: 446 gy: 121  
2:36:44.628 -> ax: -16288 ay: 932 gx: 493 gy: 118  
2:36:44.659 -> ax: -16272 ay: 956 gx: 488 gy: 186  
2:36:44.687 -> ax: -16292 ay: 948 gx: 476 gy: 121  
2:36:44.720 -> ax: -16256 ay: 932 gx: 499 gy: 138  
2:36:44.753 -> ax: -16256 ay: 898 gx: 487 gy: 183  
2:36:44.828 -> ax: -16236 ay: 928 gx: 472 gy: 126  
2:36:44.853 -> ax: -16344 ay: 892 gx: 484 gy: 111  
2:36:44.886 -> ax: -16252 ay: 888 gx: 486 gy: 188  
2:36:44.919 -> ax: -16232 ay: 892 gx: 488 gy: 112  
2:36:44.953 -> ax: -16252 ay: 988 gx: 583 gy: 123  
2:36:44.986 -> ax: -16268 ay: 936 gx: 478 gy: 148  
2:36:45.019 -> ax: -16272 ay: 928 gx: 476 gy: 116  
2:36:45.053 -> ax: -16264 ay: 928 gx: 465 gy: 124  
2:36:45.119 -> ax: -16268 ay: 936 gx: 488 gy: 128  
2:36:45.153 -> ax: -16236 ay: 916 gx: 491 gy: 114  
2:36:45.186 -> ax: -16384 ay: 896 gx: 475 gy: 124  
2:36:45.219 -> ax: -16244 ay: 892 gx: 484 gy: 124  
2:36:45.252 -> ax: -16128 ay: 988 gx: 478 gy: 115  
2:36:45.286 -> ax: -16848 ay: 968 gx: 431 gy: 181  
2:36:45.319 -> ax: -16152 ay: 928 gx: 448 gy: 134  
2:36:45.352 -> ax: -16368 ay: 928 gx: 476 gy: 127
```



Lying Down





Tilted Right

