

Task1

- The code:

```
#include <stdio.h>
```

```
float kalmanFilter(float sensor1[], float sensor2[], float accuracy1, float accuracy2)
```

```
{
```

```
    float estimatedMeasurement = sensor1[0];
```

```
    float estimatedError = accuracy1;
```

```
    for (int i=1;i<10;i++)
```

```
    {
```

```
        float kalmanGain=estimatedError/(estimatedError+accuracy2);
```

```
        estimatedMeasurement=estimatedMeasurement+kalmanGain*(sensor2[i]-  
estimatedMeasurement);
```

```
        estimatedError=(1-kalmanGain)*estimatedError;
```

```
    }
```

```
    return estimatedMeasurement;
```

```
}
```

```
int main()
```

```
{
```

```
float mpu6050[10]={0.0, 11.68, 18.95, 23.56, 25.72, 25.38, 22.65, 18.01, 10.14, -
0.26};

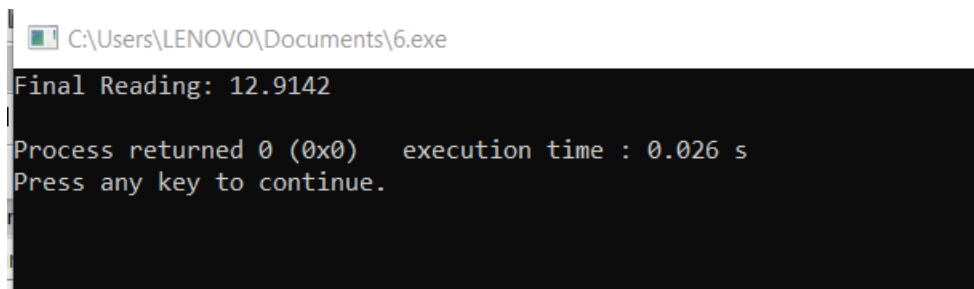
float bno55[10]={0.0, 9.49, 16.36, 21.2, 23.16, 22.8, 19.5, 14.85, 6.79, -2.69};

float accuracy1 = 0.78; // Accuracy of mpu6050 sensor
float accuracy2 = 0.92; // Accuracy of bno55 sensor

float finalReading = kalmanFilter(mpu6050, bno55, accuracy1, accuracy2);
printf("Final Reading: %.4f\n", finalReading);

return 0;
}
```

•Screen of the output:

A screenshot of a Windows command prompt window. The title bar at the top shows the file path "C:\Users\LENOVO\Documents\6.exe". The command prompt displays the text "Final Reading: 12.9142" on the first line. The second line shows "Process returned 0 (0x0) execution time : 0.026 s". The third line shows "Press any key to continue." The background of the command prompt is black, and the text is white.

```
C:\Users\LENOVO\Documents\6.exe
Final Reading: 12.9142
Process returned 0 (0x0) execution time : 0.026 s
Press any key to continue.
```