SMART_IOT

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Version
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Other Operator

These operator used to do calculation in the Script

a. &

```
a bitwise operator AND

e.g 0x1 & 0x2, the result is 0x0
```

b. |

```
a bitwise operator OR

e.g 0x1 | 0x2, the result is 0x3
```

c. ^

```
a bitwise operator XOR

e.g 0x3 ^ 0x2, the result is 0x1
```

d. +

```
Add

e.g 1 + 2, the result is 3
```

e. -

```
Minus

e.g 3 - 2, the result is 1
```

f. *

```
Multiply

e.g 3*2, the result is 6
```

g. /

```
quotient

e.g 6/5, the result is 1
```

h. %

```
Remainder

e.g 8%5, the result is 3
```

i. **

```
square

e.g 2**4, the result is 16
```

void **startDataRec** (int dur)
start the data recorder

void **setSensor** (int SensorIndex, int State)
Turn on/off the sensor.

void **setAlert** (void)
Send Alert.

void **setLCDText** (char *text, int PosX, int Line)
Display text on LCD Screen.

void **setLCDText_i** (double value, int PosX, int Line)
Display value on LCD Screen.

int **isDataRecording** (void)
Check whether the SmartIOT is recording data.

double **sqrt** (int x)
Compute the square root value of the argument x .

void **taskDelay** (int dur)
Set Delay.

Detailed Description

Function Documentation

void getDateTime (void)

get current time

int isDataRecording (void)

Check whether the SmartIOT is recording data.

Returns

result 0 - not recording, 1 - recording

read Humidity Sensor Value

Returns

humidity value in % (1-100)

Examples

HumTest.c.

int readLux (void)

read Ambient light Sensor Value

Returns

light intensity in lux (0-65535)

Examples

TestLightSensor.c.

double readMotion (int *dataIndex*)

read Motion Sensor Value

Parameters

dataIndex	the index define which data what to access
	`0 - AccelX, 1 - AccelY, 2 - AccelZ`
	`3 - GyroX,  4 - GyroY,  5 - GyroZ`
	`6 - MagX,  7 - MagY,  8 - MagZ`

Returns

corresponding sensor value

```
if dataIndex is 0 - 2, unit in m/s^2
if dataIndex is 3 - 5, unit in rad/s^2
if dataIndex is 6 - 8, unit in uTesla
```

Examples

SensorFusion.c.

int readSndLv (void)

read surrounding sound level

Returns

sound level in db (0-100)

double readTemp (void)

void setLCDText_i (double *value*, int *PosX*, int *Line*)

Display value on LCD Screen.

Parameters

value	input value(double)(can enter a floating-point numbers)
PosX	horizontal position (0-15)
Line	vertical position (0-2)

void setRGB (int *R*, int *G*, int *B*)

set the LED Color

Parameters

R	Red color channel brightness (0-255)
G	Green color channel brightness (0-255)
B	Blue color channel brightness (0-255)

Examples

SensorFusion.c, **TestLightSensor.c**, and **Test_GasSensor_RGB_GPIO.c**.

void setSensor (int *SensorIndex*, int *State*)

Turn on/off the sensor.

Parameters

SensorIndex	`0 - Temperture/Humidity Sensor(SHT40)`
	`1 - Co2/TVOC Sensor(ccs811)`
	`2 - Ambient Light and Proximity Sensors(RPR0521)`
	`3 - IMU Sensor(BNO085)`

State	0 - Off, 1 - On

double sqrt (int *x*)

Compute the square root value of the argument *x* .

Parameters

x	input value

Returns

square root value of x

Examples

SensorFusion.c.

Script Example

List of the Script Example.

a. Test Humidity

b. Test Temperature

c. Record Sensor Value

d. Test Sound Level

e. Test Gas Sensor, RGB, GPIO

f. Test Distance Sensor

g. Test Light Sensor

h. Sensor fusion

Set Relay GPIO.

void **startDataRec** (int dur)
start the data recorder

void **setSensor** (int SensorIndex, int State)
Turn on/off the sensor.

void **setAlert** (void)
Send Alert.

void **setLCDText** (char *text, int PosX, int Line)
Display text on LCD Screen.

void **setLCDText_i** (double value, int PosX, int Line)
Display value on LCD Screen.

int **isDataRecording** (void)
Check whether the SmartIOT is recording data.

double **sqrt** (int x)
Compute the square root value of the argument x .

void **taskDelay** (int dur)
Set Delay.

Example Documentation

HumTest.c

This is an example script using Humidity sensor.

```
let a;
a=readHum();
if(a>39)playBuzzer(800,10, 0);
```

SensorValueRec.c

This is an example script of Sensor Value Recording.

```
let a, b;
b = readGravity();
if(b > 5){startDataRecording(10);}
a=isDataRecording();
if(a===1) setLCDText('startrecording!', 0, 0);
else      setLCDText('              ', 0, 0);
```

TestDistSensor.c

This is an example script using the proximity sensor.

```
let d;
d=readDist()/10;
setLCDText('Distance(cm): ', 0, 0);
setLCDText('X', dist, 1);
```

SensorFusion.c

This is an example script of IMU sensor function.

```
let f=function(){};
let k=function(){};
let i=funciton(){};
let a, b, c, d, e, f, x, y, z, ac, gy, ma;
let R, G, B;
f=function(){a=readMotion(0)**2; b=readMotion(1)**2; c=readMotioin(2)**2;}
k=function(){d=readMotion(3)**2; e=readMotion(4)**2; f=readMotion(5)**2;}
i=function(){x=readMotion(6)**2;y=readMotion(7)**2;z=readMotion(8)**2;}
f(); k(); i();
ac=sqrt(a, b, c); gy=sqrt(d, e, f); ma=sqrt(x, y, z);
if(ac>5000) R=255; if(gy>10000)G=255; if(ma>5000)B=255;
setRGB(R, G, B);
```