

ASSIGNMENT-4

DISTANCE DETECTION USING ULTRASONIC SENSOR

Date	20 October 2022
Team ID	PNT2022TMID01850
Name	SOWMIYA A
Student Roll Number	7376191EC276
Maximum Marks	2 Marks

Question1 :

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send "alert" to ibm cloud and display in device recent events.

WOKWI LINK :

<https://wokwi.com/projects/305566932847821378>

CODE :

```

" dlla dld dTdl dVdl
" dV wll

" l-
" inurUwI^IE,, apt = ptfLatrl, lr',
" <nhrA3alJ -aF llr* Acc-vita- :--
" ^HucrlrH m
" TWf rll[.lu.lkr^CB- == "T^I ==> " + lliH
" ^USrlJ<KllKr[-lK<- == C' n nl lla r t g*
" Kerla
" J ini;
" "RDr dsl;

" l-
" > chtr _4W "tWKlllnlj Svrwt^ IVtaH
" [r- lJ ju- | " bx SL' V" J J l'1" jlvL-: jaj [PTV H Jh pQJl l, l r J
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" >1 W MJEWCFaM; l * * == E<ur>-uH^I> ahnbIMi lcanIEa Hk!
" Ju l^hdr lckim |] - KnHj
" G 1 uhdr cJwmld | - d:" Cm. iHvJll l rH == uE-aiE^ ul; | lhh Id
" j =^ NlPbCUxl rRdLwA; : lK- icJL-pf:
" >= < | lvi, ltunc ,e4 nrlbIMV^i jbl) 1"" pTMI^li^m lrjlit'r,ld ppj<ld^lbrvBwi
" lre am = lLj
" n ln h"lg. =>Hl
" kl lN: <st> =ll;
" a was
" X = 1
" l- ^xcl^fclrCLfWj:

```

36	p]rtYxle(trigj)]	
37	pinTwie(ecbo,"I Pl '	
	pirKdefLEbp DuTP.);	
44	wificonriect();	
41	w)ttcjonrwct ();	
42	}	
43	iraid >()/; ' Rscur^ivE Functiar	
41	(
45		
44	digitalhriteftrigp LOH);	
47	cigit^IHnte(trig^ i);	
48	deljjflic roseccnd &(IQ);	
49	c igita] rjrite(triE n L[.-;	
' : (I	fluuil dur - pulse 1 il(^clY)p H)].	
	f lwt di st - (dur * e,fi3a3)/2]	
	^4 [i•Lprint ('GistaiKiHrt cm")].	
S3	M [i•l,p [int! n (d ist);	
54		
55		
M		
57		
5fl	if (klient. : Q) {	
5^		
6«	}	
41	}	
62		
63		
€5	/* > ■ retri-evifHg.....to Cloud */	
64		
67	void lp.1 dist) {	
6^	I ^ttcMinect Q imcLtoi <all for connecting to iba	
i.M		
	mating the String in in f^jnn J son to update the data to ib«i cloud	

```

7B      crcsrtaq. the- strir^ ln i>n f0Tfl |3«MI IDQ upd3te the datj to !tM clcsjâ
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73      1-trinR ötrject]
73      5f (s1&1 :IW>
7«      i
75      diiRltfilH-itfdUEDJHlI h
7Ĝ      teriiL.printjn("D>bjcct is f*fjr")3
77      object 5
7Ü      }
79      cUe
7N      t
BI      diiRltfilM-itfdEDj LOdJf
      5ArIBI.pl! i fii }ri("h<1          fi3urri1*~) j;
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Hd      }
as
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7N      [4/1nW,=
Ü1
92
Ü3      p<Ln1:("5#ndinj; pjyJ.-üad1
=ta      Serial.printlnCpav loan) i.
95
47

```

[diagram.json](#) • [librarys.bl](#) • [Library Manager](#)

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W NHd-itrinJirHMLy! ^~Jij!^! jf Jt ^w^>FujLy dxs N Rtai cLAril lbtn Lt tUJ priM ^u^Lhb im 14¶¶ <-J
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¶¶]
UM uS) LM nll ■^LEBTmHO -I
y? iF ikljvtl.tnKLiriC^ c
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w^M!-^drtl&(w^wJ]
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LH kb fJ...b<¶¶|^|■ (-U sr^j "■ 4)^ MU Lif 1J« nfl. -miITi ial> HbbLLJi Ihr E4VKlM1
LH r^Lla iHari-¶(¶)u(Jr) : ÌL I: DK-CIU; <(
LM i^Tr{s@h
□□ 501¶-3¶¶|^~¶¶
üt }
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* dögranison *- bb<ane&1xr * Li&fer^Mönao^

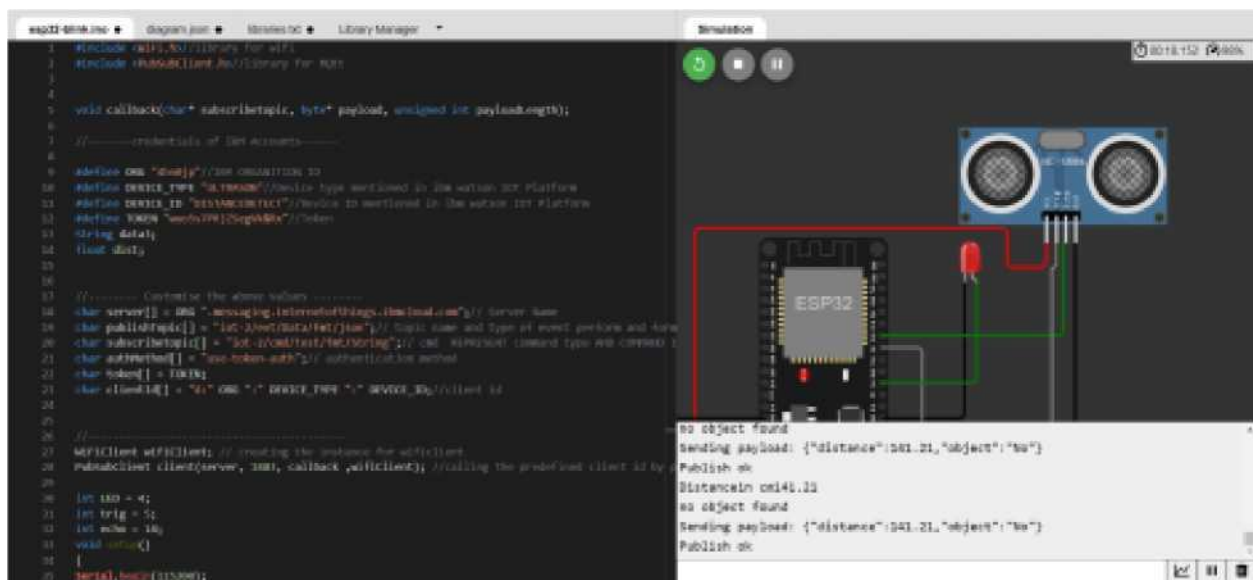
```
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m
126 WiH .1 ■ : 0 (■>.1.-=^! ■■. 11 .l: "■■, b); VuLii: t'IH yj + L utdvrU-d- : u y、 1.dbL_Ui Um : ,ji-irMi.l j-Jn whÜP (ÜlFi,ştiir^O l- HI_fÜ«HFrrED)
127 {
128     w rKliprint (":")
129 }
130
131 Serial .pirTtln("Mi Fi cönrwct«Nl");
132 5criBl.Jrifiüln("lF diMiü^ '>i
133 5eriBl^println(btiF i. locaJ EP()) i.
134 i "kl
135 iK
136 vüid ini LHun^gedtklvice-() {
137     if (ti icnt. sub^Eribc (^ubacribc^opic)) {
138         Serili i pl'int lü{ (J
139         S4rl«l. println( - 5uttwritfl to W);
140     } c-lse (
141         SerlAl,prñ)n(^Aiih^rrBîMi ta cud FATI FD*)J
142     }
143 i
144 id 3
145 kom olltJ0Ck(cimrT 5ut>wrib?(ü(Jlc, p;ilylaa«lp unRif>ı^rt ■ i? p^lM(fecnftti)
146 {
147     tiril-firintr^l lhafk inv^çd f^r t^plt- "Jf
148     Üi itLi ii(^iibEcrii>etöplc)i
149     fnr (int L - ü; 1 < payloadL cnEth; i+4)(
150         Jfieriiijjrint^(chdr)pd^ludd[i]);
151     flataJ +- Cchârpjpaylûâdril;
152 1)Z
153 i5i
154 }f £Eri^lLprintln("djft a: "H datai);
155 ÜS // if(datiS=="Hear")
156 // {
157 if S^isLprfittloCflrtalJj
```

```

esp32-blink.ino  ●  diagram.json  ●  libraries.txt  ●  Library Manager  ▼
142 }
143
144 void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
145 {
146
147     Serial.print("callback invoked for topic: ");
148     Serial.println(subscribetopic);
149     for (int i = 0; i < payloadLength; i++) {
150         //Serial.print((char)payload[i]);
151         data3 += (char)payload[i];
152     }
153
154     // Serial.println("data: "+ data3);
155     // if(data3=="Near")
156     // {
157     // Serial.println(data3);
158     // digitalWrite(LED,HIGH);
159
160     // }
161
162     // else
163     // {
164     // Serial.println(data3);
165     // digitalWrite(LED,LOW);
166
167     // }
168     data3="";
169
170
171

```

OUTPUT:



```

esp32-blink.ino  ●  diagram.json  ●  libraries.txt  ●  Library Manager  ▼
1 // Include the WiFi library for WiFi
2 // Include the MQTTClient library for MQTT
3
4
5 void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);
6
7 //-----credentials of the accounts-----
8
9 //define ONE "device"/one connection to
10 //define DEVICE_TYPE "ULTRASONIC"/device type mentioned in the section for Platform
11 //define DEVICE_ID "ULTRASONIC101"/device id mentioned in the section for Platform
12 //define TOKEN "a6b6770125q6b6b6"/token
13
14 //define data1;
15 float data1;
16
17 //----- Customise the above values -----
18 char server[] = ONE "messaging.internetofthings.ibmcloud.com"; // server name
19 char publishTopic[] = "iot/2000/data/tet/jan"; // topic name and type of event perform and name
20 char subscribetopic[] = "iot/2000/test/tet/testing"; // ONE "MESSAGE" channel type we connect to
21 char authentication[] = "use-token-auth"; // authentication method
22 char token[] = TOKEN;
23 char clientId[] = "iot" ONE " " DEVICE_TYPE " " DEVICE_ID; //client id
24
25 //-----
26 MQTTClient mqttClient; // creating the instance for mqttClient
27 mqttClient.setServer(server, 1883, callback, publishTopic); //calling the predefined client id by a
28
29
30 int led = 4;
31 int trig = 5;
32 int echo = 16;
33 void setup()
34 {
35     Serial.begin(115200);

```

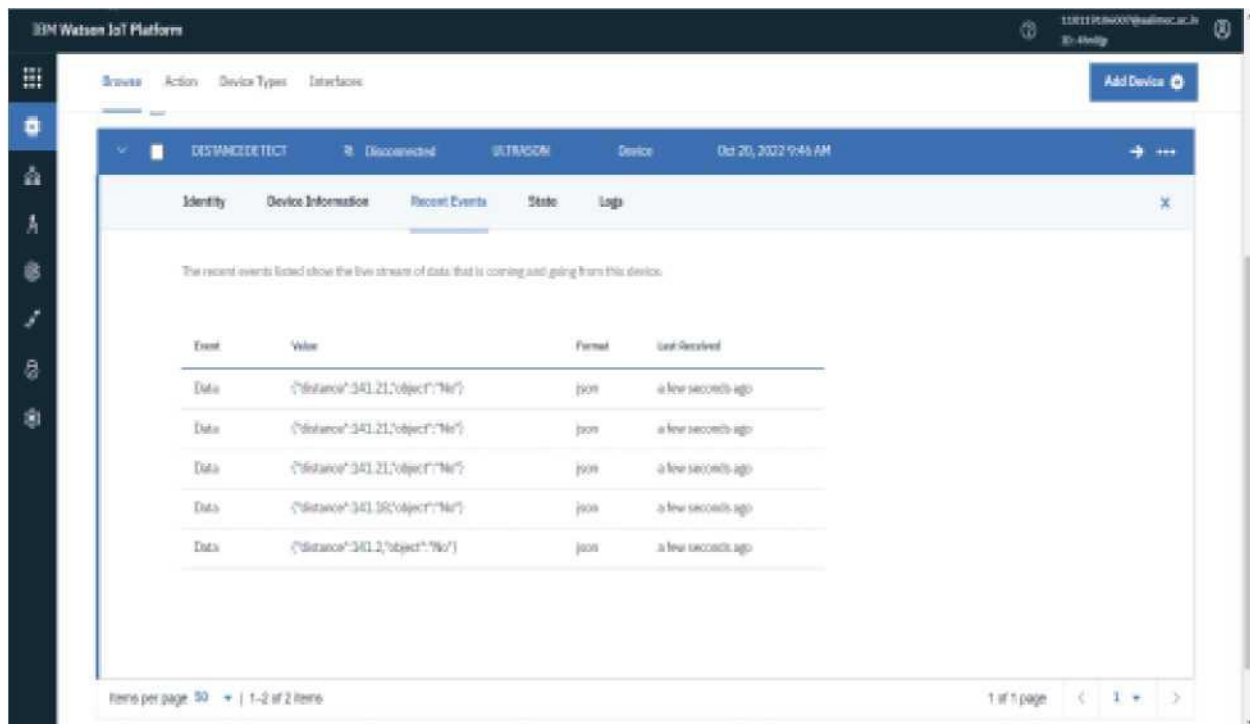
Serial Monitor Output:

```

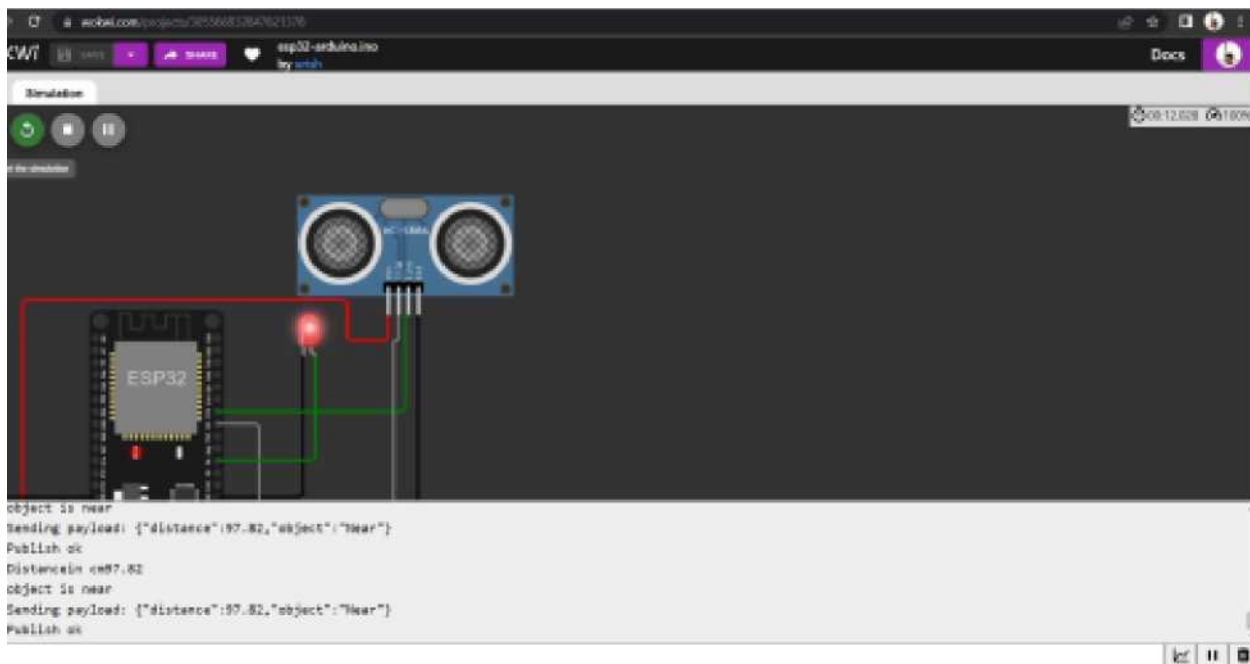
no object found
Sending payload: {"distance":241.21,"object":"no"}
Publish ok
Distancein cm140.22
no object found
Sending payload: {"distance":241.21,"object":"no"}
Publish ok

```

Data send to the IBM cloud device when the object is far



when object is near to the ultrasonic sensor



Data sent to the IBM Cloud Device when the object is near

IBM Watson IoT Platform

Device Action Device Types Interfaces

15011906081@usblm.ac.jp

15011906081@usblm.ac.jp

Device: DISCONNECTED | Disconnected | ULTIMOSM | Device | Oct 20, 2022 9:06 AM

Identity Device Information Recent Events State Logs

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Data	["distance":79.66,"object":"Near"]	json	a few seconds ago
Data	["distance":79.64,"object":"Near"]	json	a few seconds ago
Data	["distance":79.66,"object":"Near"]	json	a few seconds ago
Data	["distance":79.64,"object":"Near"]	json	a few seconds ago
Data	["distance":79.66,"object":"Near"]	json	a few seconds ago

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