

ASSIGNMENT-4

DISTANCE DETECTION USING ULTRASONIC SENSOR

Date	20 October 2022
Team ID	PNT2022TMID01694
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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',
" <nlhrA3al.l -aF llr* Acc-vita- :--
" ^HucrlrH m
" TWf rll[.lu.lkr^CB- == "T^A l ===>" + llHl
" ^USrlrJ=KllKrl-;lk<- == C' n nl lla r l g^
" Kerla
"J ini;
" "RDrll dsl;

ll-
" > chtr _4W "tWKllllnj Svrwt^ IVtaH
" [r- lJ ju- | " bx SL' V^ UJ l'l^ jlvL-: jaj [PTV H Jh pQJl l, l lr J
" dw urIMerllwtBfUj] == 1")" ==a( npauIT ftauJ mb- ^unm // li-hi ER- FEBMI familia
" >1 W MJEWCFaM; l * * == E<ur>-uH^A l> ahnbllM lcanlEa Hk!
" Ju ^hdr lckim |] - KnHj
" G 1 uhdr cJwmld | - d:" Cm. iHvJll lrlH == uE-aiE^ ul; | lhlH ld
"
" =^ NlPbCUxl rRdLwA; : lK- icJL-pf:
" => <| * lul, ltunc ,e4 nrlbIMV^i jbl) 1^^^ pTMI^li^m lrj^ltt'r,ld ppj<ld^lbrvBwl
"
" lre am = lLj
" n ln h"lg. =>Hl
" kl lN: <st> =ll;
" a was
" X = 1
" lM- ^ncl^tclrCLfWj:

```

em^J-bllnkJino * daqr^mj^on * HSRBnes.Mt » Lbraiy kianaqer '

```
36     p]rtYxle(trigj             )])
37     pinTwie(ecbo,"I PI '
       pirKdefLEbp DuTP.);

44     wificonriect();
41     w)ttcjonrwct ();
42     }
43     iraid             >()/; ' Rscur^ivE Functiar
41     (
45    
44     digitalhriteftrigg LOH);
47     cigit^IHnte(trig^ i);
48     deljjflic roseccnd &( IQ);
49     c igita] rjrite(triE n L[ .-;
': (I     fluiil 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
71      V
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;
S3      ObjECt - "lta" 5
Hd      }
as
      5i | i! : p^vluad          5 2
a?      (uyloåd 4- difit;
NM      — "/" -V.>b>KtX"TV-j
fii      iluyiEkid t- DbjActg.
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](#)

< I<Ekwht-i^ILiiKP^-I^rDf^j U<¶■■■§ p*fImd^c_atr()>) I
W NHd-itrinJirHMLy! ^~Jij!^! jf Jt ^w^>FujLy dxs N Rtai cLAril lbtn Lt tUJ priM ^u^Lhb im 14¶¶ <-J
Mf■^]■ ¶qybLi+ fkikoJ
¶¶]
UM uS) LM nll ■^LEBTmHO -I
y? iF ikljvtl.tnKLiriC^ c
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w^M!-^drtl&(w^wJ]
"r Mbjk (llklEni^miCttiCiLettr^ ^Hv^ih^!) -I
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±± ¶¶^¶¶^¶¶ [ø^¶M
LH kb fJ...bç¶|^]■[(-U sr^j "■ 4)^ MU Lif 1J« nfl. -miITi ial> HbbLLJi Ihr E4VKlM1
LH r^Lla iHari-vlç)u)(Jr[- ÌL I: DK-CIU; <(
LM i^Tr{s@h
□□ 501¶-3¶¶^~¶¶
üt }
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liriXrfirtû^IFI rawfCZKTJ;
LLi terLBJ.priTr¶ip ^BdimRK ">;
¿IJ terlimi."bTL'IcGijDP^)H

* dögranison *- bb<ane&1xr * Li&fer^Mönao^

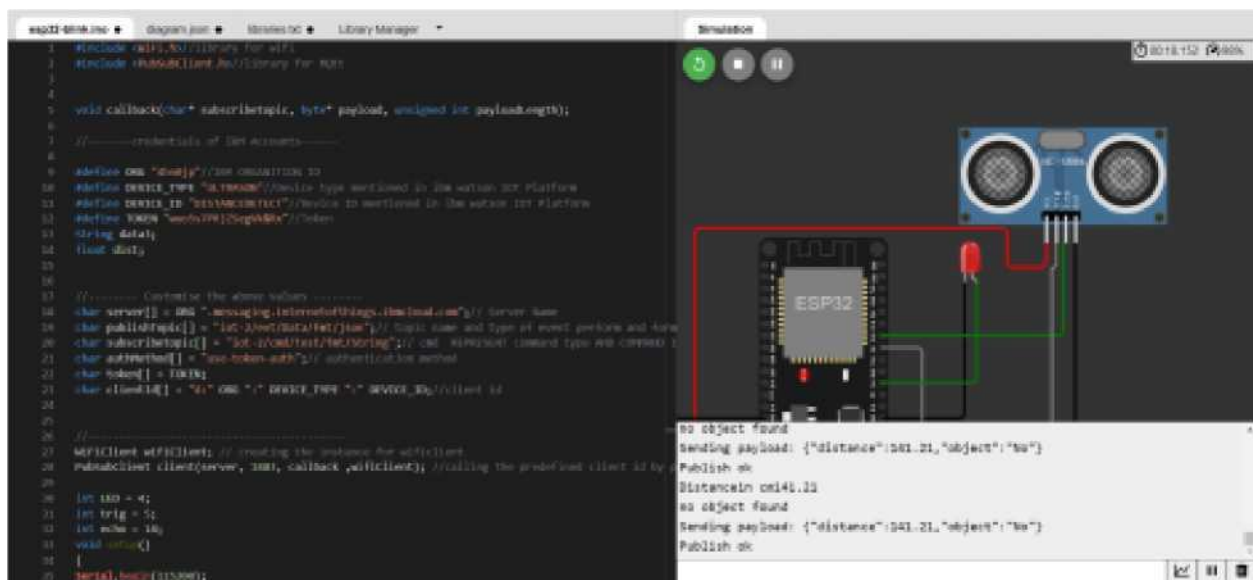
```
m
m
126 WiH .1 ■ : 0 (■>.1.-=^! ■■. 11 .l: "■■, b); VuLii: t'IH yj + L utdvrU-d- : u y、 f.dbL_Ui Um : ,ji-irMi.l j-Jn whÜP (ÜlFi,ştiir^O l- HI_fÜ«HFrrED)
127 {
128     w rKliprint (" ')]
129 }
130
131 Serial .pirTtln("Mi Fi cönrwct«Nl");
132 5criBİ.Jrifftln("lF diMiü^ '>i
133 5eriBİ^println(btiF i. locaJ EP()) i.
134 i "kİ t
135 İK
136 vüid ini LHun^gedtklvice-() {
137     if (ti icnt. sub^Eribc (^ubacribc^opic)) {
138         Serili i pl'int lı{ (J
139         S4rl«l. println( - 5uttwritfl to W);
140     } c-lse (
141         SerİAİ,prİ)n(^Aııh^rrBİMi ta cud FATİ FD*)J
142     }
143 i
144 İd 3
145 İdd «om olltJ0Ck(cİMr^ 5ut>wrib?(ü(Jİc, p;ıylaa«İp unRıf>ı^rt ■ i? p^İM(fecnİtti)
146 {
147     tıriİl-firintr^İ İhafk inv^çd f^r t^plt- "Jf
148     Üİ İtLiİ(^İİbEcriİ>etöplc)İ
149 İdQ fnr (İnt L - Ü; 1 < payloadL cnEth; i+4)(
150     Jfierİİjİrint^(chdr)pd^İudd[i]);
151     flataJ +- Cchârİjpayİüâdrİl;
152 İZ
153 İ5İ
154 İf £Eri^İLprintln("djft a: "H dataİ);
155 ÜS // İf(datiS=="Hear")
156 İf {
157     İf S^İsLprİftİtoCflrtalJj
```

```

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 "a66b779125gpk6Mx"/token
13 //define data1;
14 //define data2;
15
16 //----- Customise the above values -----
17 char server[] = ONE "messaging.internetofthings.ibmcloud.com"; // server name
18 char publishTopic[] = "iot/2000/data/tet/jan"; // topic name and type of event perform and name
19 char subscribetopic[] = "iot/2000/data/tet/jan"; // one keyword (named type) we connect to
20 char authentication[] = "use-token-auth"; // authentication method
21 char token[] = TOKEN;
22 char clientId[] = "iot" ONE " " DEVICE_TYPE " " DEVICE_ID; //client id
23
24
25 //-----
26 MQTTClient myClient; // creating the instance for myClient
27 MQTTClient myClient(server, 1883, callback, publishTopic); //calling the predefined client id by a
28
29
30 //in init = 1;
31 //in trig = 5;
32 //in echo = 10;
33 void setup()
34 {
35     Serial.begin(115200);
36

```

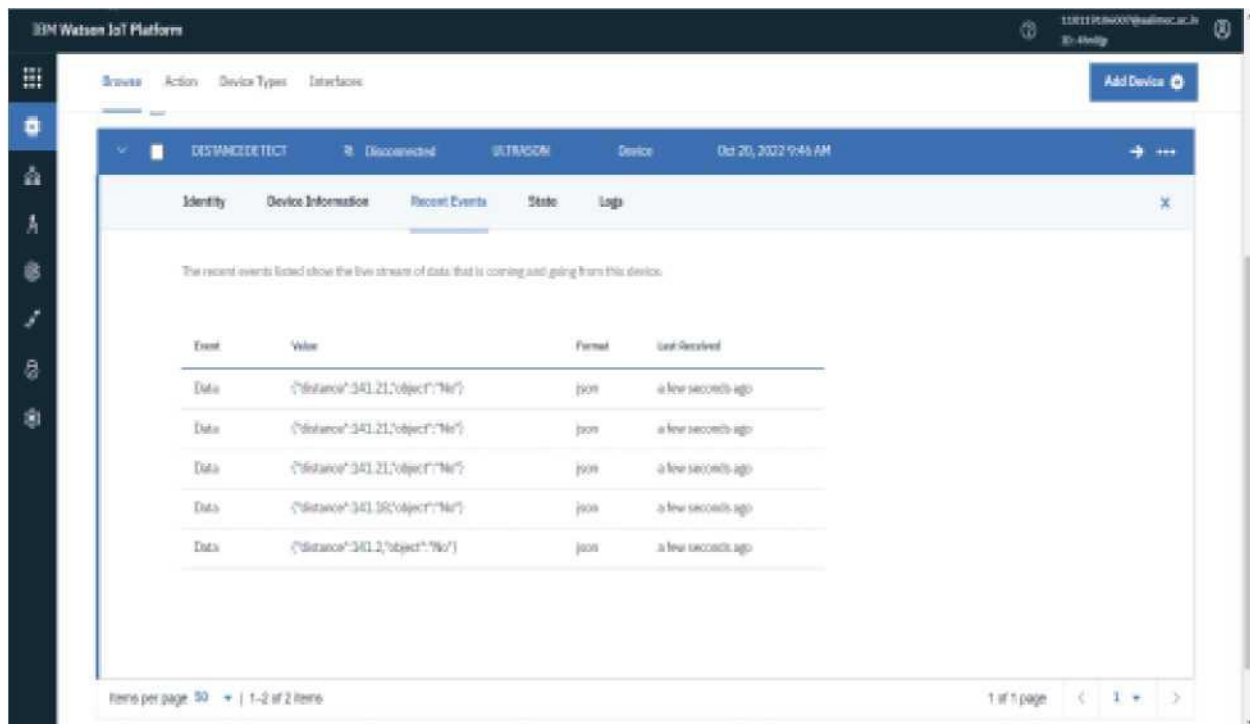
Serial Monitor Output:

```

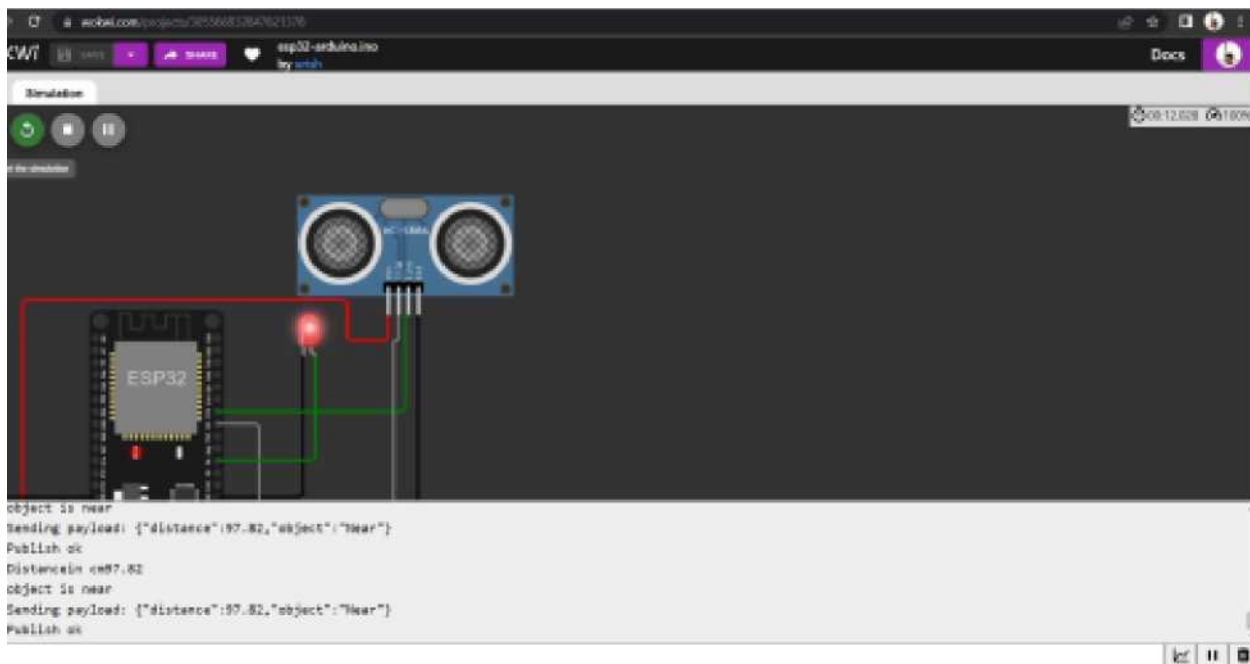
no object found
Sending payload: {"distance":201.21,"object":"no"}
Publish ok
Distance on 140.22
no object found
Sending payload: {"distance":201.21,"object":"no"}
Publish ok

```

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@adhuac.jp

15011906081@adhuac.jp

Device: DISCONNECTED | Status: Disconnected | Device Type: ULTIMOSM | Device: Device | Date: 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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