

Assignment -4
Python Programming

Assignment Date	26 October 2022
Student Name	VETRIKUMAR V
Student Roll Number	731619106043
Maximum Marks	2 Marks

Question-1:

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.

Upload document with wokwi share link and images of ibm cloud.

Solution:

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wokwi.com/projects/346566226034557523

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sketch.ino ▾ diagram.json libraries.txt ▾ Library Manager ▾

1 #include<WiFi.h> //library for wifi
2 #include<PubSubClient.h> //library for MQTT
3 void callback(char* subscribetopic, byte* payload,unsigned int payloadlength);
4 //-----credentials of IBM Account-----
5 #define ORG "izyy6o" // IBM ORGANIZATION ID
6 #define DEVICE_TYPE "iotedeviceproject" //DEVICE TYPE MENTIONED IN IOT WATSON PLATFORM
7 #define DEVICE_ID "229714" //DEVICE ID MENTIONED IN IOT WATSON PLATFORM
8 #define TOKEN "24681012" //Token
9 String data3;
10 float dist;
11 //-----customize the above value-----
12 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; //server name
13 char publishstopic[] = "ultrasonic/evt/Data/fmt/json"; //topic name and type of event perform
14 | and format in which data to be send*/
15 char subscribetopic[] = "ultrasonic/cmd/test/fmt/String"; //cmd REPRESENT Command type and
16 | COMMAND IS TEST OF FORMAT STRING*/
17 char authMethod[] = "use-token-auth"; //authentication method
18 char token[] = TOKEN;
19 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; //CLIENT ID
20 //-----
21 WiFiClient wificlient; // creating an instance for wificlient
22 PubSubClient client(server, 1883, callback, wificlient); //calling the predefined client id
23 | by passing parameter like server id,portand wificredential*/
24 int LED = 4;
25 int trig = 5;
26 int echo = 18;
27 void setup()
28 {
29 Serial.begin(115200);
30 pinMode(trig,OUTPUT);
...

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WOKWI

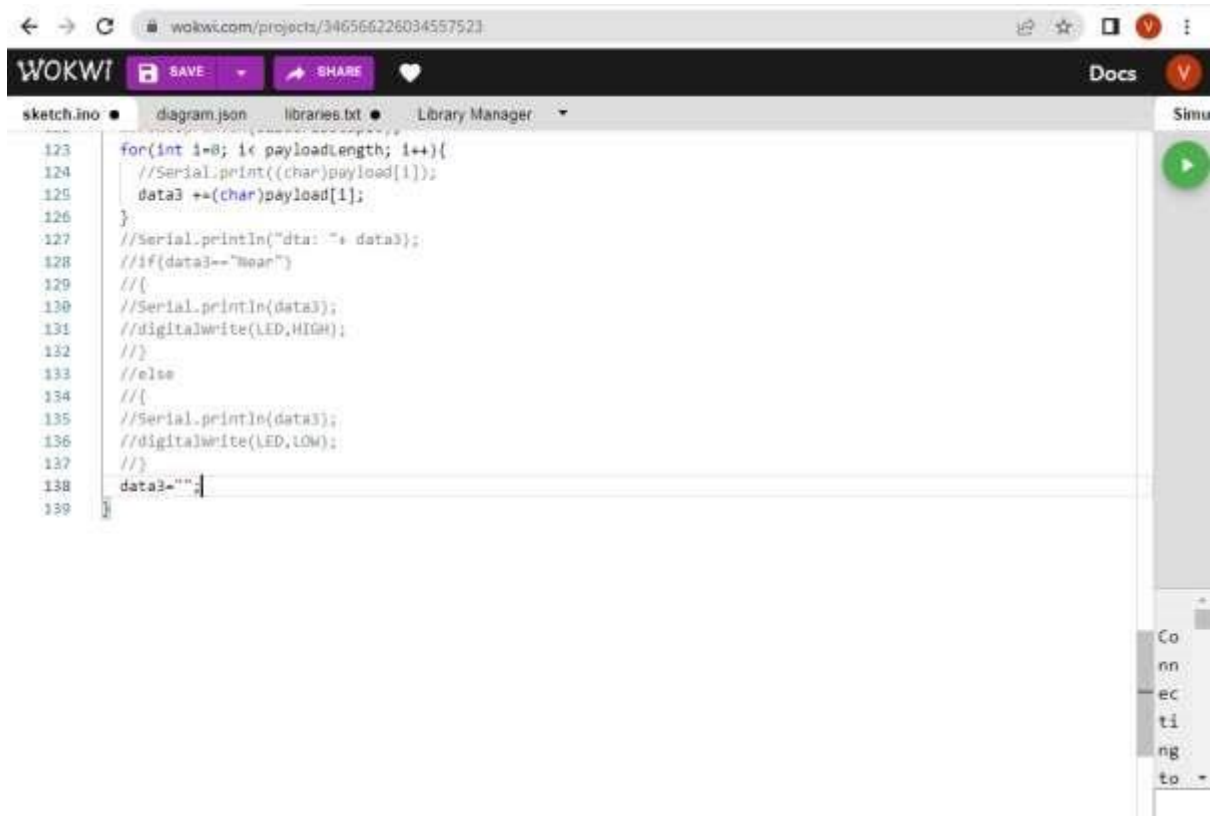
SAVE

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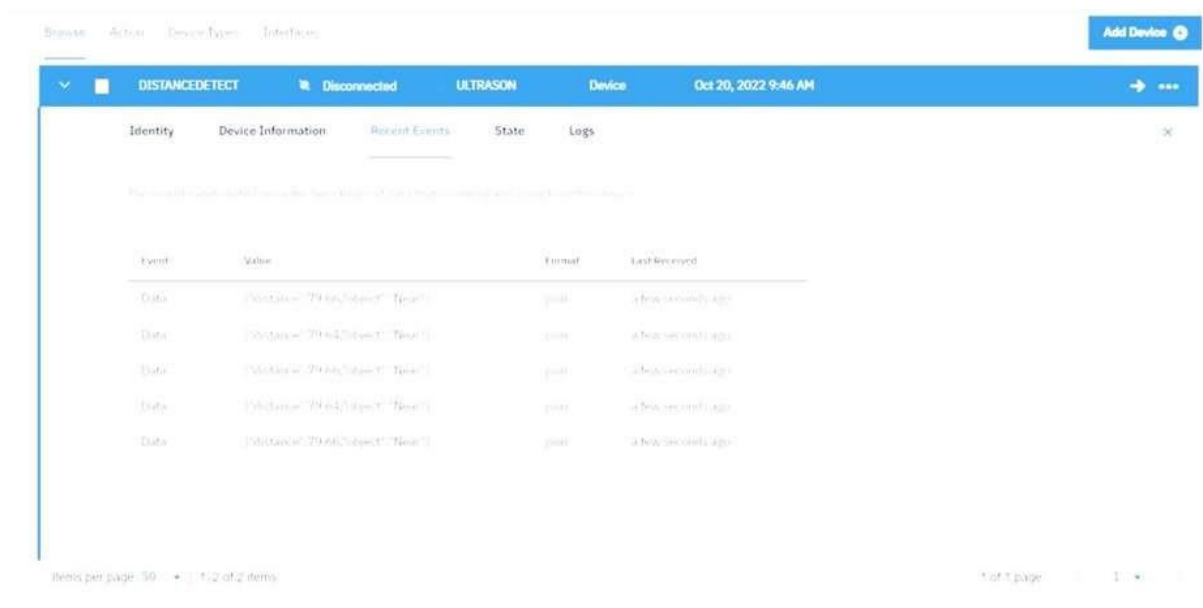
Docs

sketch.ino ● diagram.json libraries.txt ● Library Manager

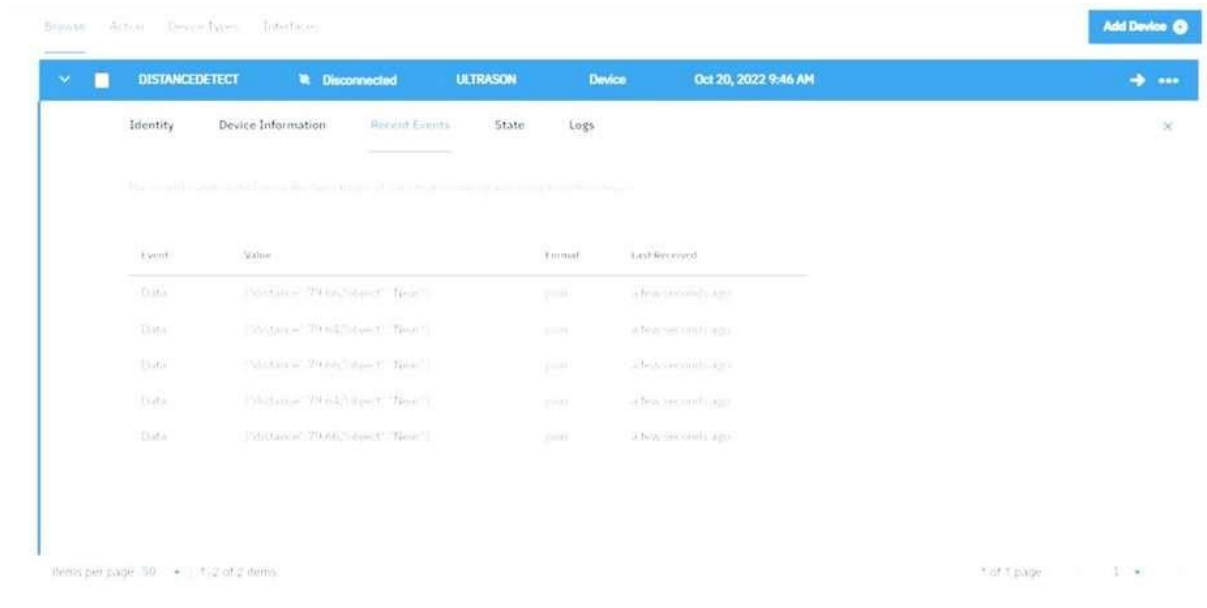
61Serial.println("no object is near");
62object="Near";
63}
64else
65{
66digitalWrite(LED,LOW);
67Serial.println("no object found");
68object="No";
69}
70String payload="{\"distance\":";
71payload +=dist;
72payload +=\",\" + \"\"object\":\":";
73payload += object;
74payload += \"\"}\"";
75
76Serial.print("Sending payload: ");
77Serial.println(payload);
78if(client.publish(publishtopic, (char*) payload.c_str())){
79Serial.println("Publish ok");/* If its sucessfully upload data on the cloud then it will print
80publish ok in serial monitor or else it will print poblish failed*/
81}
82else{
83Serial.println("Publish failed");
84}
85
86void mqttconnect(){
87if(!client.connected()){
88Serial.print("Reconnecting client to ");
89Serial.println(server);
90while(!client.connect(clientid,authMethod, token)){
91Serial.print(".");
92delay(500);
93}94}95}96}97}98}99}100}101}102}103}104}105}106}107}108}109}110}111}112}113}114}115}116}117}118}119}120}121}122}123}124}125}126}127}128}129}130}131}132}133}134}135}136}137}138}139}140}141}142}143}144}145}146}147}148}149}150}151}152}153}154}155}156}157}158}159}160}161}162}163}164}165}166}167}168}169}170}171}172}173}174}175}176}177}178}179}180}181}182}183}184}185}186}187}188}189}190}191}192}193}194}195}196}197}198}199}200}201}202}203}204}205}206}207}208}209}210}211}212}213}214}215}216}217}218}219}220}221}222}223}224}225}226}227}228}229}230}231}232}233}234}235}236}237}238}239}240}241}242}243}244}245}246}247}248}249}250}251}252}253}254}255}256}257}258}259}260}261}262}263}264}265}266}267}268}269}270}271}272}273}274}275}276}277}278}279}280}281}282}283}284}285}286}287}288}289}290}291}292}293}294}295}296}297}298}299}300}301}302}303}304}305}306}307}308}309}310}311}312}313}314}315}316}317}318}319}320}321}322}323}324}325}326}327}328}329}330}331}332}333}334}335}336}337}338}339}340}341}342}343}344}345}346}347}348}349}350}351}352}353}354}355}356}357}358}359}360}361}362}363}364}365}366}367}368}369}370}371}372}373}374}375}376}377}378}379}380}381}382}383}384}385}386}387}388}389}390}391}392}393}394}395}396}397}398}399}400}401}402}403}404}405}406}407}408}409}410}411}412}413}414}415}416}417}418}419}420}421}422}423}424}425}426}427}428}429}430}431}432}433}434}435}436}437}438}439}440}441}442}443}444}445}446}447}448}449}450}451}452}453}454}455}456}457}458}459}460}461}462}463}464}465}466}467}468}469}470}471}472}473}474}475}476}477}478}479}480}481}482}483}484}485}486}487}488}489}490}491}492}493}494}495}496}497}498}499}500}501}502}503}504}505}506}507}508}509}510}511}512}513}514}515}516}517}518}519}520}521}522}523}524}525}526}527}528}529}530}531}532}533}534}535}536}537}538}539}540}541}542}543}544}545}546}547}548}549}550}551}552}553}554}555}556}557}558}559}560}561}562}563}564}565}566}567}568}569}570}571}572}573}574}575}576}577}578}579}580}581}582}583}584}585}586}587}588}589}590}591}592}593}594}595}596}597}598}599}600}601}602}603}604}605}606}607}608}609}610}611}612}613}614}615}616}617}618}619}620}621}622}623}624}625}626}627}628}629}630}631}632}633}634}635}636}637}638}639}640}641}642}643}644}645}646}647}648}649}650}651}652}653}654}655}656}657}658}659}660}661}662}663}664}665}666}667}668}669}670}671}672}673}674}675}676}677}678}679}680}681}682}683}684}685}686}687}688}689}690}691}692}693}694}695}696}697}698}699}700}701}702}703}704}705}706}707}708}709}710}711}712}713}714}715}716}717}718}719}720}721}722}723}724}725}726}727}728}729}730}731}732}733}734}735}736}737}738}739}740}741}742}743}744}745}746}747}748}749}750}751}752}753}754}755}756}757}758}759}760}761}762}763}764}765}766}767}768}769}770}771}772}773}774}775}776}777}778}779}780}781}782}783}784}785}786}787}788}789}790}791}792}793}794}795}796}797}798}799}800}801}802}803}804}805}806}807}808}809}810}811}812}813}814}815}816}817}818}819}820}821}822}823}824}825}826}827}828}829}830}831}832}833}834}835}836}837}838}839}840}841}842}843}844}845}846}847}848}849}850}851}852}853}854}855}856}857}858}859}860}861}862}863}864}865}866}867}868}869}870}871}872}873}874}875}876}877}878}879}880}881}882}883}884}885}886}887}888}889}890}891}892}893}894}895}896}897}898}899}900}901}902}903}904}905}906}907}908}909}910}911}912}913}914}915}916}917}918}919}920}921}922}923}924}925}926}927}928}929}930}931}932}933}934}935}936}937}938}939}940}941}942}943}944}945}946}947}948}949}950}951}952}953}954}955}956}957}958}959}960}961}962}963}964}965}966}967}968}969}970}971}972}973}974}975}976}977}978}979}980}981}982}983}984}985}986}987}988}989}990}991}992}993}994}995}996}997}998}999}1000}1001}1002}1003}1004}1005}1006}1007}1008}1009}1010}1011}1012}1013}1014}1015}1016}1017}1018}1019}1020}1021}1022}1023}1024}1025}1026}1027}1028}1029}1030}1031}1032}1033}1034}1035}1036}1037}1038}1039}1040}1041}1042}1043}1044}1045}1046}1047}1048}1049}1050}1051}1052}1053}1054}1055}1056}1057}1058}1059}1060}1061}1062}1063}1064}1065}1066}1067}1068}1069}1070}1071}1072}1073}1074}1075}1076}1077}1078}1079}1080}1081}1082}1083}1084}1085}1086}1087}1088}1089}1090}1091}1092}1093}1094}1095}1096}1097}1098}1099}1100}1101}1102}1103}1104}1105}1106}1107}1108}1109}1110}1111}1112}1113}1114}1115}1116}1117}1118}1119}1120}1121}1122}1123}1124}1125}1126}1127}1128}1129}1130}1131}1132}1133}1134}1135}1136}1137}1138}1139}1140}1141}1142}1143}1144}1145}1146}1147}1148}1149}1150}1151}1152}1153}1154}1155}1156}1157}1158}1159}1160}1161}1162}1163}1164}1165}1166}1167}1168}1169}1170}1171}1172}1173}1174}1175}1176}1177}1178}1179}1180}1181}1182}1183}1184}1185}1186}1187}1188}1189}1190}1191}1192}1193}1194}1195}1196}1197}1198}1199}1200}1201}1202}1203}1204}1205}1206}1207}1208}1209}1210}1211}1212}1213}1214}1215}1216}1217}1218}1219}1220}1221}1222}1223}1224}1225}1226}1227}1228}1229}1230}1231}1232}1233}1234}1235}1236}1237}1238}1239}1240}1241}1242}1243}1244}1245}1246}1247}1248}1249}1250}1251}1252}1253}1254}1255}1256}1257}1258}1259}1260}1261}1262}1263}1264}1265}1266}1267}1268}1269}1270}1271}1272}1273}1274}1275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OUTPUT:
DATA IS SENT TO IBM CLOUD WHEN NO OBJECT IS DETECTED



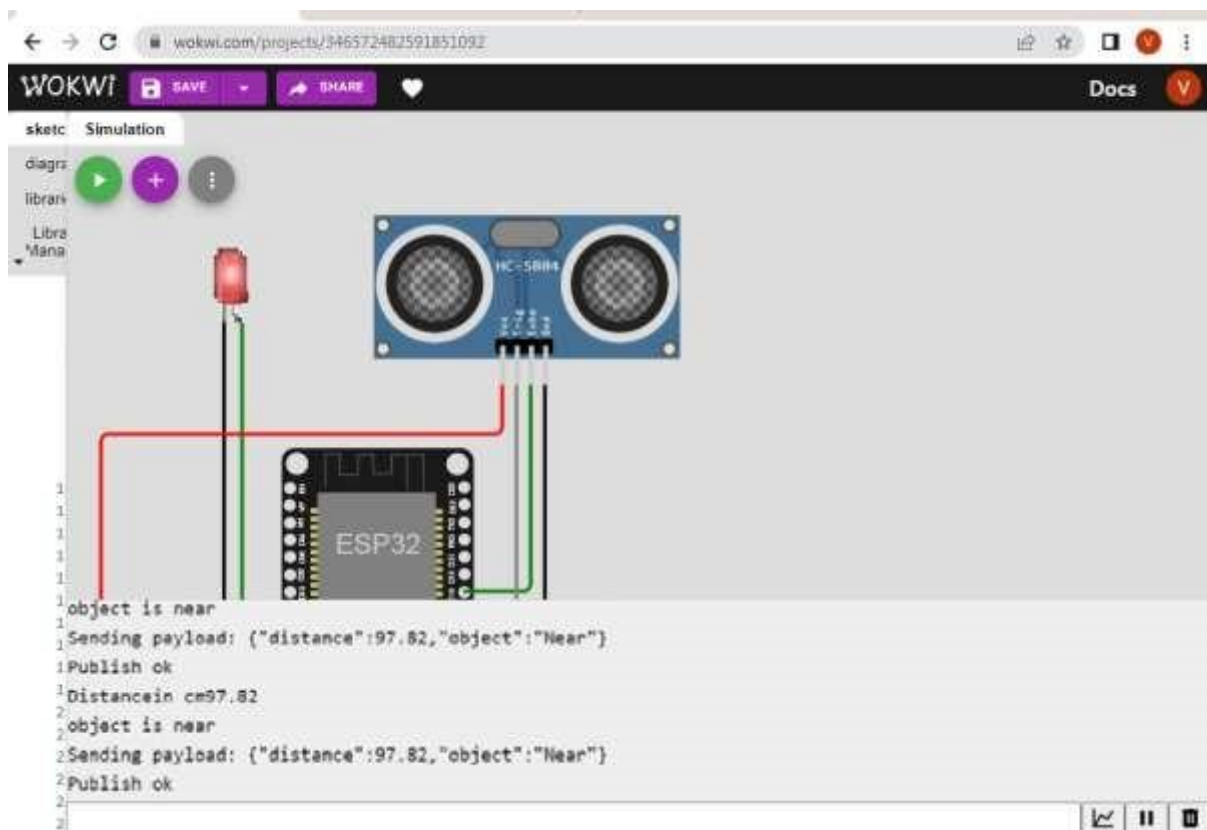
When no object is detected



The screenshot shows the Wokwi IoT dashboard for a device named 'DISTANCEDETECT'. The device is in a 'Disconnected' state. The 'Recent Events' tab is selected, showing a table of events. The table has four columns: 'Event', 'Value', 'Format', and 'Last Received'. There are five rows of data, all with the value '[Distance: 79.66/object: "Near"]' and the format 'json'. The 'Last Received' column shows times like 'a few seconds ago'.

Event	Value	Format	Last Received
Data	[Distance: 79.66/object: "Near"]	json	a few seconds ago
Data	[Distance: 79.66/object: "Near"]	json	a few seconds ago
Data	[Distance: 79.66/object: "Near"]	json	a few seconds ago
Data	[Distance: 79.66/object: "Near"]	json	a few seconds ago
Data	[Distance: 79.66/object: "Near"]	json	a few seconds ago

When object is detected in ultrasonic detector



The screenshot shows the Wokwi IoT dashboard for a device named 'DISTANCEDETECT'. The device is in a 'Connected' state. The 'Recent Events' tab is selected, showing a table of events. The table has four columns: 'Event', 'Value', 'Format', and 'Last Received'. There are five rows of data, all with the value '[Distance: 97.82/object: "Near"]' and the format 'json'. The 'Last Received' column shows times like 'a few seconds ago'.

Event	Value	Format	Last Received
Data	[Distance: 97.82/object: "Near"]	json	a few seconds ago
Data	[Distance: 97.82/object: "Near"]	json	a few seconds ago
Data	[Distance: 97.82/object: "Near"]	json	a few seconds ago
Data	[Distance: 97.82/object: "Near"]	json	a few seconds ago
Data	[Distance: 97.82/object: "Near"]	json	a few seconds ago