

**Assignment -4**  
Python Programming

Assignment Date	26 October 2022
Student Name	BATHMA S
Student Roll Number	210819106008
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 "iyy6o" // 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 tupe 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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sketch.ino ● diagram.json libraries.txt ● Library Manager

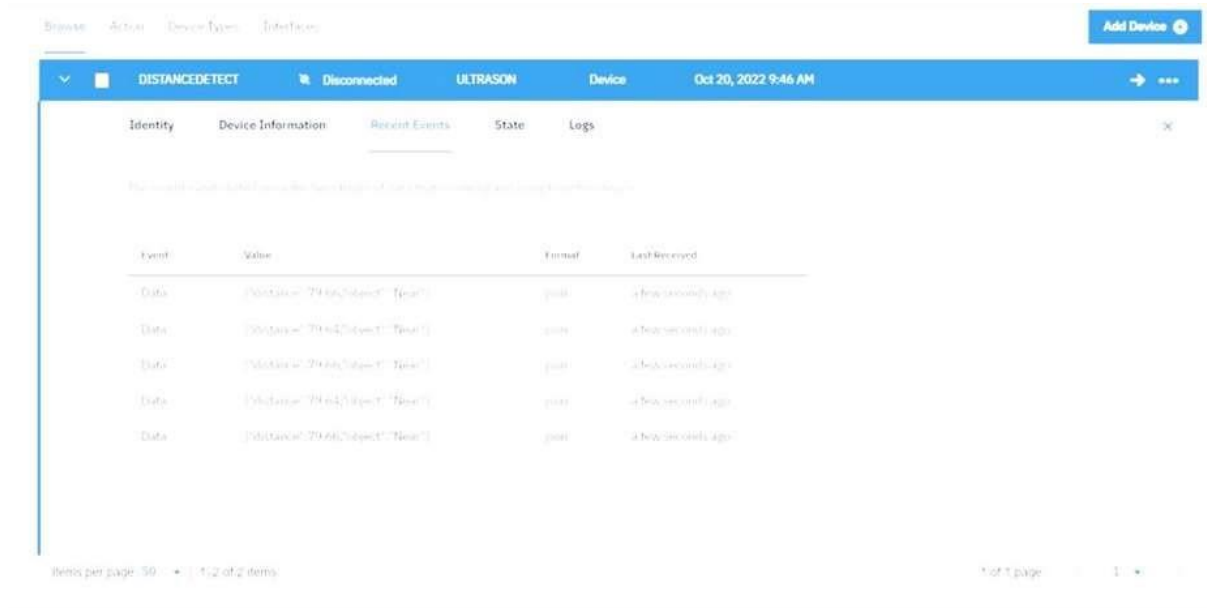
61Serial.println("no object is near");  
62object="Near";  
63}  
64else  
65{  
66digitalWrite(LED,LOW);  
67Serial.println("no object found");  
68object="No";  
69}  
70String payload="{\"distance\":";  
71payload +=dist;  
72payload +=\",\" + \"\"object\":\":";  
73payload += object;  
74payload += \"\"}\"";  
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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```
123 for(int i=0; i< payloadlength; i++){
124   //Serial.print((char)payload[i]);
125   data3 +=(char)payload[i];
126 }
127 //Serial.println("data: "+ data3);
128 //if(data3=="Near")
129 //{
130 //Serial.println(data3);
131 //digitalWrite(LED,HIGH);
132 //}
133 //else
134 //{
135 //Serial.println(data3);
136 //digitalWrite(LED,LOW);
137 //}
138 data3="";
139 }
```

OUTPUT:  
DATA IS SENT TO IBM CLOUD WHEN NO OBJECT IS DETECTED

Event	Value	Format	Last Received
Data	"Distance: 79.62/object: Near"	json	a few seconds ago
Data	"Distance: 79.62/object: Near"	json	a few seconds ago
Data	"Distance: 79.62/object: Near"	json	a few seconds ago
Data	"Distance: 79.62/object: Near"	json	a few seconds ago
Data	"Distance: 79.62/object: Near"	json	a few seconds ago

## When no object is detected

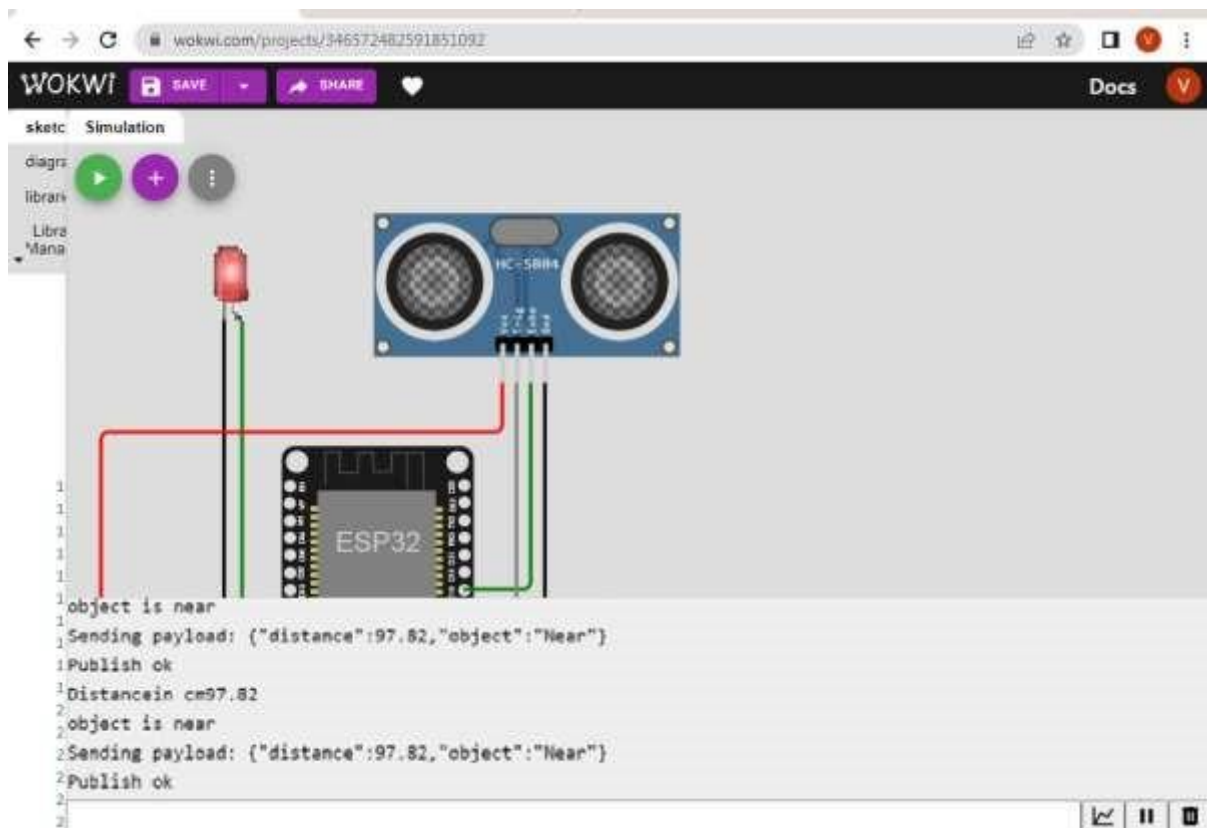


The screenshot shows the Wokwi web interface for a project named "DISTANCEDETECT". The device is an "ULTRASON" sensor, currently "Disconnected". The interface includes tabs for "Identity", "Device Information", "Recent Events", "State", and "Logs". The "Recent Events" tab is active, displaying a table of events. The table has columns for "Event", "Value", "Format", and "Last Received". There are five events listed, all with a "Data" event type and a "Distance" value of "99.66". The "Format" column shows "json" and the "Last Received" column shows "a few seconds ago".

Event	Value	Format	Last Received
Data	{\"distance\":99.66,\"object\":\"None\"}	json	a few seconds ago
Data	{\"distance\":99.66,\"object\":\"None\"}	json	a few seconds ago
Data	{\"distance\":99.66,\"object\":\"None\"}	json	a few seconds ago
Data	{\"distance\":99.66,\"object\":\"None\"}	json	a few seconds ago
Data	{\"distance\":99.66,\"object\":\"None\"}	json	a few seconds ago

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## When object is detected in ultrasonic detector



The screenshot shows the Wokwi web interface for a project named "DISTANCEDETECT". The device is an "ULTRASON" sensor, currently "Connected". The interface includes tabs for "Identity", "Device Information", "Recent Events", "State", and "Logs". The "Recent Events" tab is active, displaying a table of events. The table has columns for "Event", "Value", "Format", and "Last Received". There are five events listed, all with a "Data" event type and a "Distance" value of "97.82". The "Format" column shows "json" and the "Last Received" column shows "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

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