Smart Farmer - IoT Enabled Smart Farming Application

SPRINT-4

Team ID	PNT2022TMID35924
Project name	Smart farmer- IoT
	enabled smart farming

In this session, we have developed the App for our project using MIT App Inventor, which displays the following field parameters – Moisture, Temperature, Humidity, Flame, Nitrogen, Phosphorous, Potassium. It also displays the Motor ON and OFF switches to control the water sprinklers located in the field from our Mobile itself. It consists of three screens whose screenshots are attached below:

SCREEN 1:

Front End:



Back End:

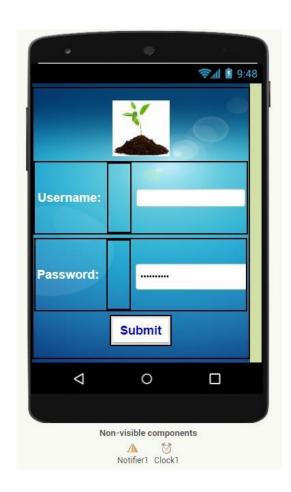
```
when Clock1 · . Timer

do set Clock1 · . TimerEnabled · to false · open another screen screenName (Screen2 ·
```

The above screenshot shows our screen 1. When the App is opened, this screen will be displayed for 3s then it moves to our login page. We have used Vertical Arrangement, Horizontal Arrangement and Clock components.

SCREEN 2:

Front End:



Back End:

```
when Button1 Click

do if TextBox1 Text ibm and PasswordTextBox1 Text ibm then call Notifier1 ShowAlert notice Cogin successful open another screen screenName Screen3 else call Notifier1 ShowAlert notice Check your credentials when Screen2 Initialize do set Clock1 TimerEnabled to false
```

This shows our screen 2. In this, we have designed our login page. When the user feeds the correct credentials, they will be moved to the next page. And if the login credentials are wrong, they will be stuck in the same page until they enter the correct details. We have used vertical and horizontal arrangements, labels, textbox, password textbox, button, notifier and clock components in this.

SCREEN 3:

Front End:



Back End:

```
when Clock1 Timer
   set Web1 . Url to http://169.51.205.41:32484/data
   call Web1 - .Get
when Web1 GotText
url responseCode responseType responseContent
do set Label12 . Text to look up in pairs key potassium
                                      pairs call Web2 JsonTextDecode
                                                               jsonText get responseContent •
                                   notFound not found
   set Label13 . Text to look up in pairs key flame
                                      pairs call Web2 JsonTextDecode
                                                               jsonText get responseContent
                                   notFound not found
    set Label16 . Text to look up in pairs key temp
                                      pairs call Web2 .JsonTextDecode
                                                              jsonText get responseContent •
                                   notFound not found a
    set Label15 . Text to look up in pairs key initrogen
                                      pairs call Web2 JsonTextDecode
                                                              jsonText get responseContent •
                                   notFound " uday "
    set Label5 . Text to look up in pairs key "humidity"
                                      pairs call Web2 JsonTextDecode
```

```
" uday "
 set Label5 . Text to look up in pairs key
                                             humidity
                                             call Web2 JsonTextDecode
                                                                         get responseContent
                                             not found
                                  notFound
 set (Label8 . Text . to look up in pairs key
                                             " moisture "
                                     pairs call Web2 JsonTextDecode
                                                                jsonText
                                                                         get responseContent
                                             " not found "
                                  notFound
 set Label14 . Text to look up in pairs key
                                              phosporus
                                             call Web2 .JsonTextDecode
                                                                          get responseContent
                                   notFound not found
vhen Button1 Click
do set Web2 . Url to http://169.51.205.41:32484/command?command=motoron
    call Web2 .Get
when Button2 Click
do set Web2 . Uri to
                            http://169.51.205.41:32484/command?command=motor...
    call Web2 .Get
```

This Screen is our final one. This displays all our field parameters, the inputs of which are delivered by the Node-RED Software. When the moisture reading drops below a certain level or the flame threshold is reached, an 'alert' SMS is sent to the user. The Motor ON/OFF switches are also used to control the field irrigation system. We have used vertical and horizontal arrangement, label, button, clock and web components.

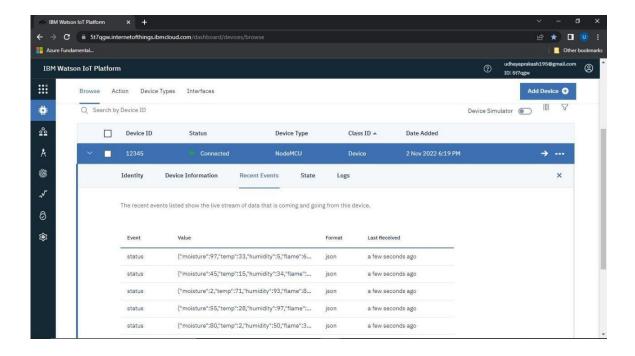
OUTPUT:

The following output flow is observed:

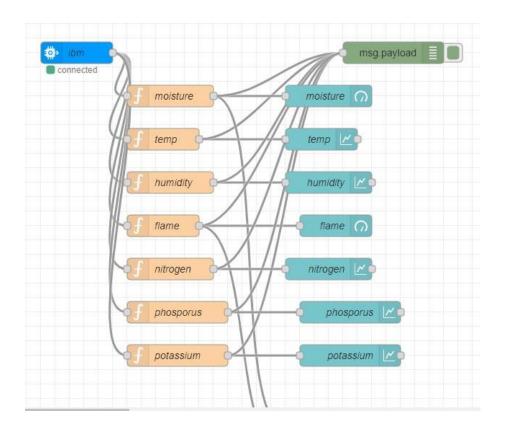
Python IDLE:

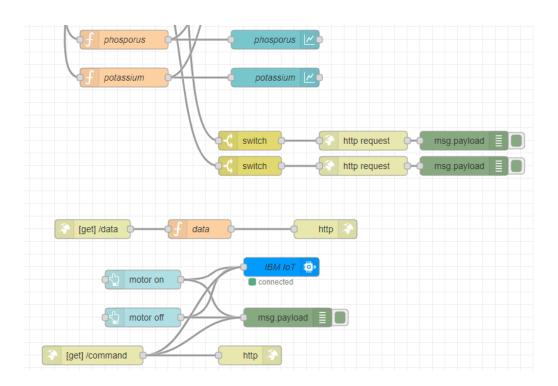
```
Python 3.8.0 Shell*
File Edit Shell Debug Options Window Help 13, phosporus: 03, pocassium: 30)
Published data Successfully: %s ('moisture': 5, 'temp': 35, 'humidity': 45, 'flame': 93, 'nitrogen': 3
9, 'phosporus': 5, 'potassium': 61}
Message received from IBM IoT Platform: motoron
Motor is switched ON
Published data Successfully: %s {'moisture': 45, 'temp': 54, 'humidity': 17, 'flame': 59, 'nitrogen':
0, 'phosporus': 73, 'potassium': 29}
Published data Successfully: %s {'moisture': 45, 'temp': 21, 'humidity': 83, 'flame': 16, 'nitrogen':
30, 'phosporus': 40, 'potassium': 22}
Published data Successfully: %s {'moisture': 89, 'temp': 23, 'humidity': 34, 'flame': 50, 'nitrogen':
54, 'phosporus': 31, 'potassium': 43)
Published data Successfully: %s ('moisture': 95, 'temp': 7, 'humidity': 0, 'flame': 73, 'nitrogen': 16
  'phosporus': 78, 'potassium': 89)
Published data Successfully: %s ('moisture': 80, 'temp': 62, 'humidity': 69, 'flame': 88, 'nitrogen':
32, 'phosporus': 16, 'potassium': 59}
Published data Successfully: %s ('moisture': 11, 'temp': 41, 'humidity': 69, 'flame': 43, 'nitrogen':
2, 'phosporus': 30, 'potassium': 6}
Published data Successfully: %s {'moisture': 78, 'temp': 19, 'humidity': 9, 'flame': 53, 'nitrogen': 1
4, 'phosporus': 91, 'potassium': 40}
Published data Successfully: %s {'moisture': 66, 'temp': 83, 'humidity': 55, 'flame': 0, 'nitrogen': 7
9, 'phosporus': 16, 'potassium': 79}
Published data Successfully: %s {'moisture': 60, 'temp': 50, 'humidity': 79, 'flame': 34, 'nitrogen':
   'phosporus': 86, 'potassium': 51}
Published data Successfully: %s {'moisture': 7, 'temp': 50, 'humidity': 39, 'flame': 100, 'nitrogen':
34, 'phosporus': 76, 'potassium': 55)
Published data Successfully: %s {'moisture': 17, 'temp': 54, 'humidity': 23, 'flame': 97, 'nitrogen':
44, 'phosporus': 92, 'potassium': 91}
Published data Successfully: %s ('moisture': 61, 'temp': 71, 'humidity': 92, 'flame': 67, 'nitrogen':
41, 'phosporus': 32, 'potassium': 19}
```

IBM Cloud:

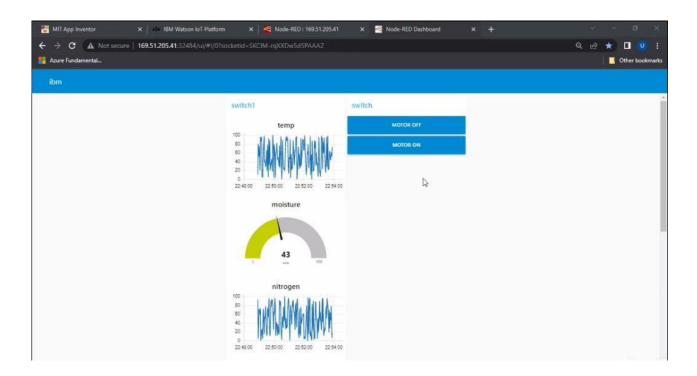


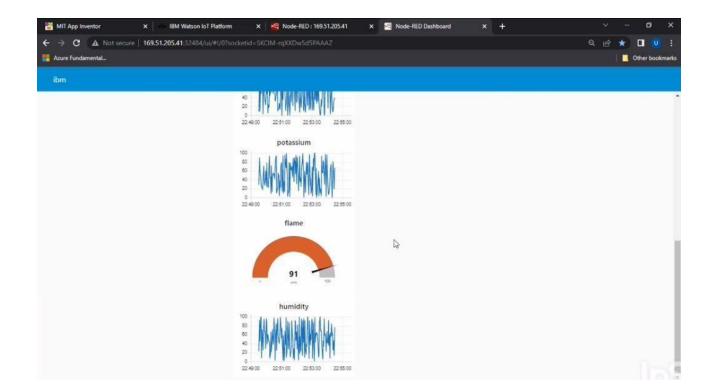
Node-RED Flow:





Web-UI:

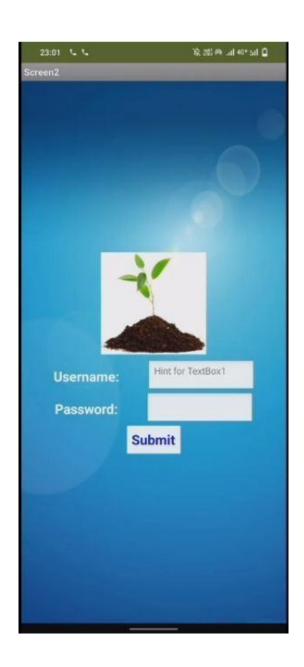


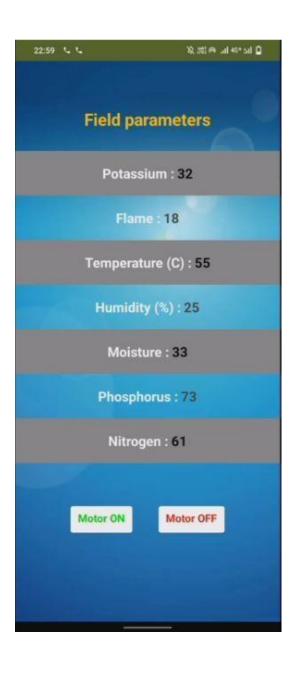


App Display: Screen1:

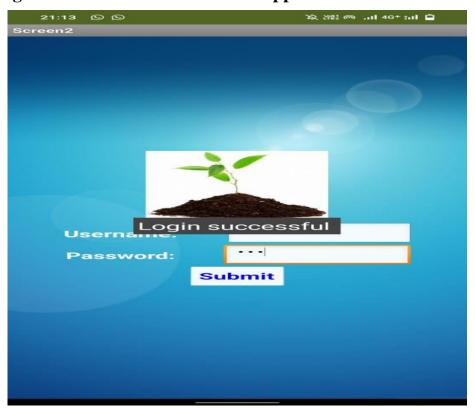


Screen 2: Screen 3:

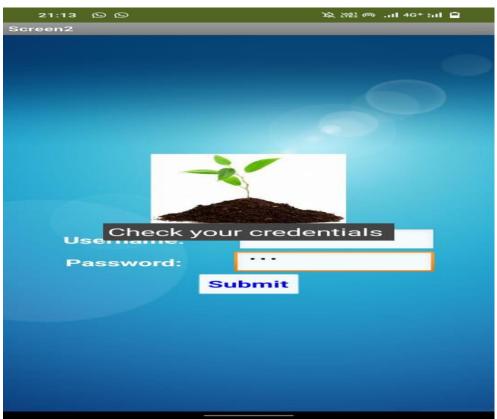




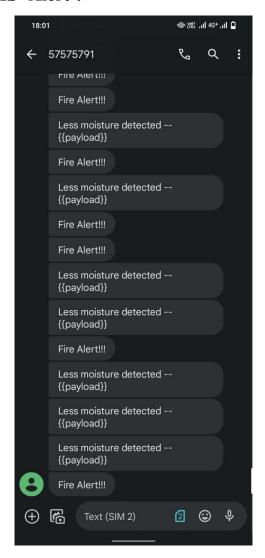
When wrong credentials are entered in the app:



When wrong credentials are entered in the app:



SMS 'Alert':



Motor ON:

Message received from IBM IoT Platform: motoron Motor is switched ON

Motor OFF:

Message received from IBM IoT Platform: motoroff Motor is switched OFF