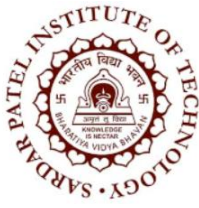




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Course - Consumer Electronics (CE)

UID	2021300101
Name	Adwait Purao
Batch	Batch C
Date	12/09/2024
Experiment No.	5
Aim	To understand cloud processing: To write data using MATLAB on thingspeak and visualize real time data also how to extract information in data.
Theory	<ol style="list-style-type: none">1. Cloud Processing:<ol style="list-style-type: none">a. Definition: Cloud processing refers to the use of remote servers (cloud) to store, manage, and process data. It allows users to access computing resources and services over the internet, eliminating the need for local infrastructure.b. Benefits: Cloud processing offers scalability, flexibility, cost-effectiveness, and accessibility from anywhere with an internet connection. It can handle large volumes of data and provides services like storage, computation, and data analytics.2. Writing Data using MATLAB on ThingSpeak:<ol style="list-style-type: none">a. ThingSpeak: ThingSpeak is an IoT platform that allows users to collect, analyze, and visualize data from IoT devices.b. Writing Data: In MATLAB, you can use the ThingSpeak API to write data to your ThingSpeak channel. This involves specifying the channel ID and Write API Key, along with the data you want to write. Writing data to ThingSpeak enables you to store and organize data for analysis and visualization.3. Visualizing Real-Time Data:<ol style="list-style-type: none">a. Real-Time Data: Real-time data refers to data that is generated continuously and needs to be processed and visualized without delay.b. Visualization: MATLAB provides powerful visualization tools to plot real-time data. You can use functions like plot, scatter, or bar to create visual representations of your data. Visualizing real-time data helps in monitoring trends, patterns, and anomalies in the data as it is being generated.4. Extracting Information from Data:<ol style="list-style-type: none">a. Data Analysis: Data analysis involves extracting meaningful insights and information from raw data.b. Techniques: In MATLAB, you can perform various data analysis techniques such as statistical analysis (mean, median, standard deviation), data filtering, smoothing, interpolation, and advanced analytics using machine learning algorithms.c. Purpose: Extracting information from data helps in understanding trends, making predictions, identifying correlations, and making data-driven decisions.



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Output

Conditions applied at backend :

1) The function behind input bar that takes text as input

```
when Button1.Click
do
  call TaifunNotification1.Send
    seconds 2
    title "System Overheated"
    text "The temperature of the boiler is above 90 degrees"
    startText "Alert"
```

2) The function where mathematical logic is applied:

```
when ListPicker1.BeforePicking
do
  set ListPicker1.Elements to BluetoothClient1.AddressesAndNames

when ListPicker1.AfterPicking
do
  set ListPicker1.Selection to call BluetoothClient1.Connect
    address ListPicker1.Selection

if BluetoothClient1.IsConnected
then
  set TextBox1.Text to "Connected"
else
  set TextBox1.Text to "Disconnected"

when Clock1.Timer
do
  if BluetoothClient1.IsConnected
  then
    set global global_x to get global global_x + 1
    set global global_y to call BluetoothClient1.ReceiveSigned1ByteNumber
    set Label3.Text to get global global_y
    call Canvas1.DrawPoint
      x get global global_x
      y get global global_y
    if get global global_x == Canvas1.Width
    then
      call Canvas1.Clear
      set global global_x to 0
      set global global_y to 0

  initialize global global_x to 0
  initialize global global_y to 0
```

3) Function that takes into consideration procedures of the application:



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```
when ListPicker1 .BeforePicking
do set ListPicker1 . Elements to BluetoothClient1 . AddressesAndNames

when ListPicker1 .AfterPicking
do set ListPicker1 . Selection to call BluetoothClient1 .Connect
address ListPicker1 . Selection

if BluetoothClient1 . IsConnected
then set TextBox1 . Text to " Connected "
else set TextBox1 . Text to " Disconnected "

when Button2 .Click
do call BluetoothClient1 .SendText
text " 1 "

when Button1 .Click
do call BluetoothClient1 .SendText
text " 0 "
```

Finally presented interface with the above functionality :
1)Add button



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☐ Display hidden components in Viewer

Phone size (505,320) ▾

Android 5+ Devices (Android Material) ▾

Screen1

Click Here

Non-visible components

TaifunNotification1

2)Add input bar



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3) Add picture of the selected image



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Conclusion

Thus the experiment helped to learn about MIT App Inventor which helped to design apps without need for explicit coding, and using user friendly interface.