PROJECT DOCUMENT (Phase 5)

AIR QUALITY MONITORING

INTRODUCTION:

Air quality monitoring is a critical aspect of environmental science and public health. Its involves the measurement and analysis of various pollutants in the earth atmosphere quality of air we breathe. This introduction will delve into the significance of IOT in air quality monitoring.

OBJECTIVES:

- Measuring Pollutant: Monitoring stations measure various air pollutants.
- Health Protection: It helps protect public health by providing real time data on air quality, enabling timely alert and advisories during pollution events.
- Environmental Protection: Monitoring helps safeguard ecosystem and natural resources by identifying pollution sources and their impacts on the environment.
- Research and Analysis: Researchers use air quality data to study trends, understand pollution causes, and develop strategies for air quality improvement.

- Public Awareness: It raises public awareness about air quality issues encouraging individuals and communities to take action to reduce their contribution to air pollution.

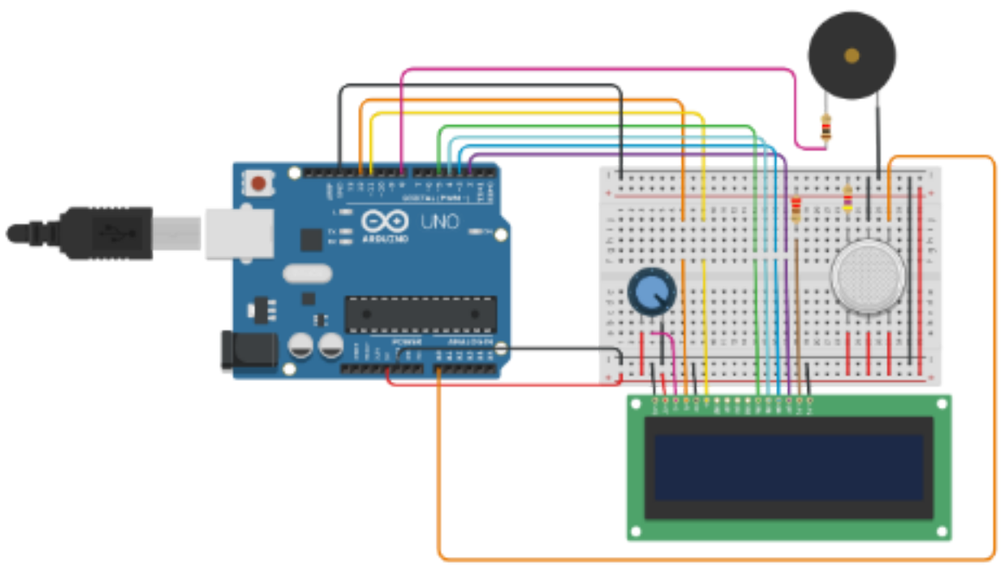
PROGRAM

```
# importing Randomforest

from sklearn.ensemble import AdaBoostRegressor

from sklearn.ensemble import RandomForestRegressor



# creating model

m1 = RandomForestRegressor()



# separating class label and other attributes

train1 = train.drop(['air_quality_index'], axis=1)

target = train['air_quality_index']



# Fitting the model

m1.fit(train1, target)

'''RandomForestRegressor(bootstrap=True, ccp_alpha=0.0,
criterion='mse',

          max_depth=None, max_features='auto',
max_leaf_nodes=None,

          max_samples=None, min_impurity_decrease=0.0,

          min_impurity_split=None, min_samples_leaf=1,
```

```
        min_samples_split=2, min_weight_fraction_leaf=0.0,

        n_estimators=100, n_jobs=None, oob_score=False,

        random_state=None, verbose=0,
warm_start=False)'''



# calculating the score and the score is
97.96360799890066%

m1.score(train1, target) * 100



# predicting the model with other values (testing the
data)

# so AQI is 123.71

m1.predict([[123, 45, 67, 34, 5, 0, 23]])



# Adaboost model

# importing module



# defining model

m2 = AdaBoostRegressor()



# Fitting the model

m2.fit(train1, target)



'''AdaBoostRegressor(base_estimator=None,
learning_rate=1.0, loss='linear',

       n_estimators=50, random_state=None)'''
```

```
# calculating the score and the score is
96.15377360010211%

m2.score(train1, target)*100



# predicting the model with other values (testing the
data)

# so AQI is 94.42105263

m2.predict([[123, 45, 67, 34, 5, 0, 23]])
```

SCHEMATIC DIAGRAM:



GLIMPSE:

The main intent of our project is to monitor the air pollution in main cities, urban and sub urban areas to reduce the amount of air pollution produced. To develop our idea ,we have implemented IOT sensor.

IOT sensors: The first step is to deploy IOT sensors that are equipped to measure air quality levels. This sensor can be used in urban ,areas industrial zones .

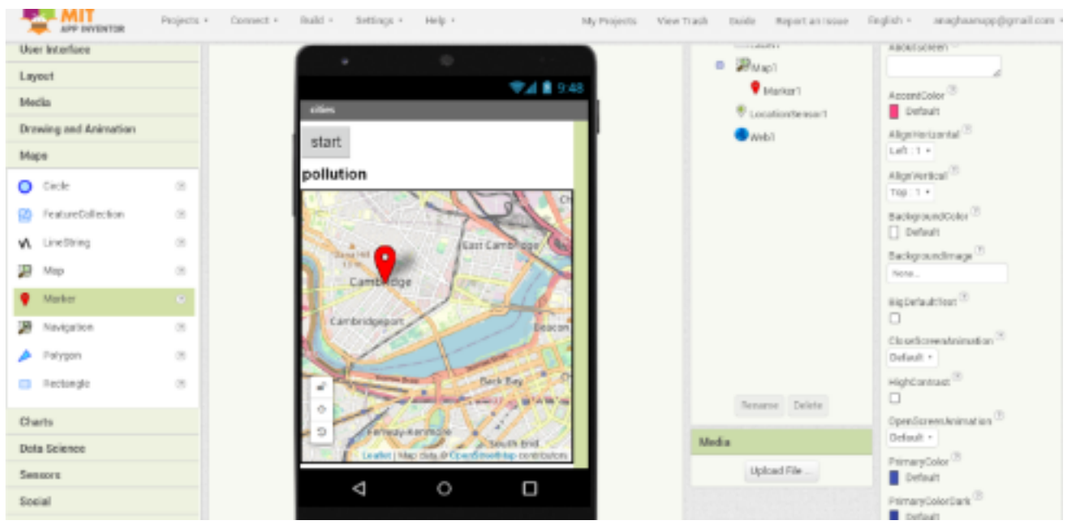
Data collection: The sensor continuously collect the data on air quality level . This can be done via weird or wireless communication such as wi-fi or cellular network

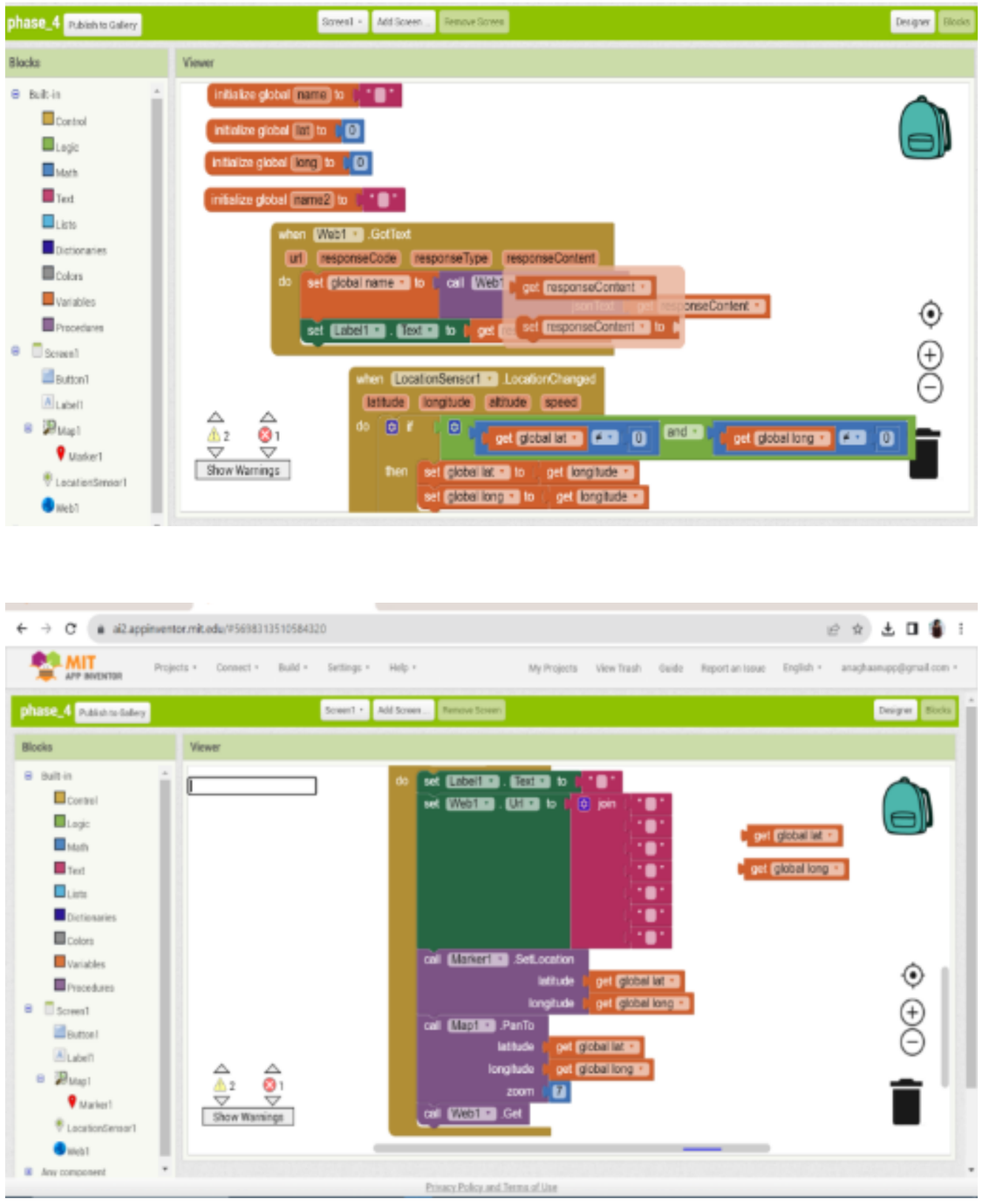
Data storage and Processing: The data is stored in a central database , either on cloud based server or local server, depending on the projects scale and requirements.

User Accessibility: The collection of air pollution data can be made accessible to the public through web portals mobile apps or public displays.

APPLICATION DEVELOPMENT:

For more convenience we have developed an application for monitoring air quality using “ MIT app inverter” . The sensor were connect to the mobile device .You might need to use Bluetooth, Wi-Fi or other communication protocols. If the location is provide based on the air quality data. Created the documentation app for our project .




phase_4
Publish to Gallery
Screen1
Add Screen ...
Remove Screen
Designer
Blocks
Viewer
initialize global name to
initialize global lat to 0
initialize global long to 0
initialize global name2 to
when Web1 .GotText
url responseCode responseType responseContent
do set global name to call Web1
get responseContent
set responseContent1 to
when LocationSensor1 .LocationChanged
latitude longitude altitude speed
do if get global lat 0 and get global long 0
then set global lat to get longitude
set global long to get longitude
Show Warnings

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MIT APP INVENTOR
Projects
Connect
Build
Settings
Help
My Projects
View Trash
Guide
Report an Issue
English
phase_4
Publish to Gallery
Screen1
Add Screen ...
Remove Screen
Designer
Blocks
Viewer
set Label1 . Text to
set Web1 . Url to join
get global lat
get global long
call Marker1 .SetLocation
latitude get global lat
longitude get global long
call Map1 .PanTo
latitude get global lat
longitude get global long
zoom 7
call Web1 .Get
Show Warnings
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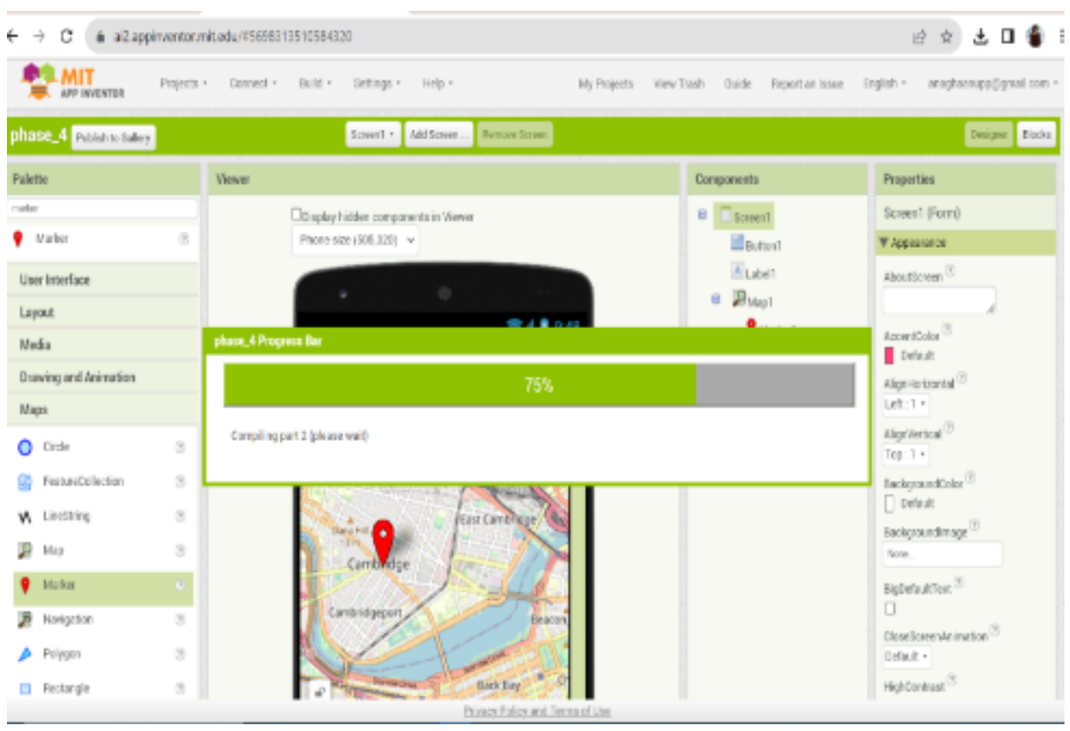
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MIT APP INVENTOR
Projects
Connect
Build
Settings
Help
My Projects
View Trash
Guide
Report an issue
English
phase_4
Publish to Gallery
Screen1
Add Screen ...
Remove Screen
Designer
Blocks
Palette
Marker
User Interface
Layout
Media
Drawing and Animation
Maps
Circle
FeatureCollection
LineString
Map
Marker
Navigation
Polygon
Rectangle
Viewer
Display hidden components in Viewer
Phone size (506,320)
phase_4 Progress Bar
75%
Compiling part 2 (please wait)
Components
Screen1
Button1
Label1
Map1
Properties
Screen1 (Form)
Appearance
AboutScreen
AccentColor
Default
AlignHorizontal
Left : 1
AlignVertical
Top : 1
BackgroundColor
Default
BackgroundImage
None
BigDefaultText
CloseScreenAnimation
Default
HighContrast
East Cambridge
Cambridge
Cambridgeport
Back Bay
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REFERENCE;

Certainly, we reference a book for air quality monitoring , you can follow some general for book citations .

Author (s). (Year of publication). Title of the book. Publisher.

For example, if you are referencing a book on air quality monitoring by Bhattachariya ,S.Sridevi, 2012 December. Monitoring of indoor air quality using a WSN.

CONCLUSION:

This project will be very significant in many places such as cities and urban areas. Air quality monitoring is a crucial aspect of environmental management. It help us assess the levels of various pollutants in the various atmosphere, identify potential health risks and make inform decisions to mitigate air pollution. Continuous monitoring, data analysis, and public awareness are essential for maintaining clean and safe air for the well-being of both humans and the environment.