

PROJECT DOCUMENT (Phase 5)

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)'''

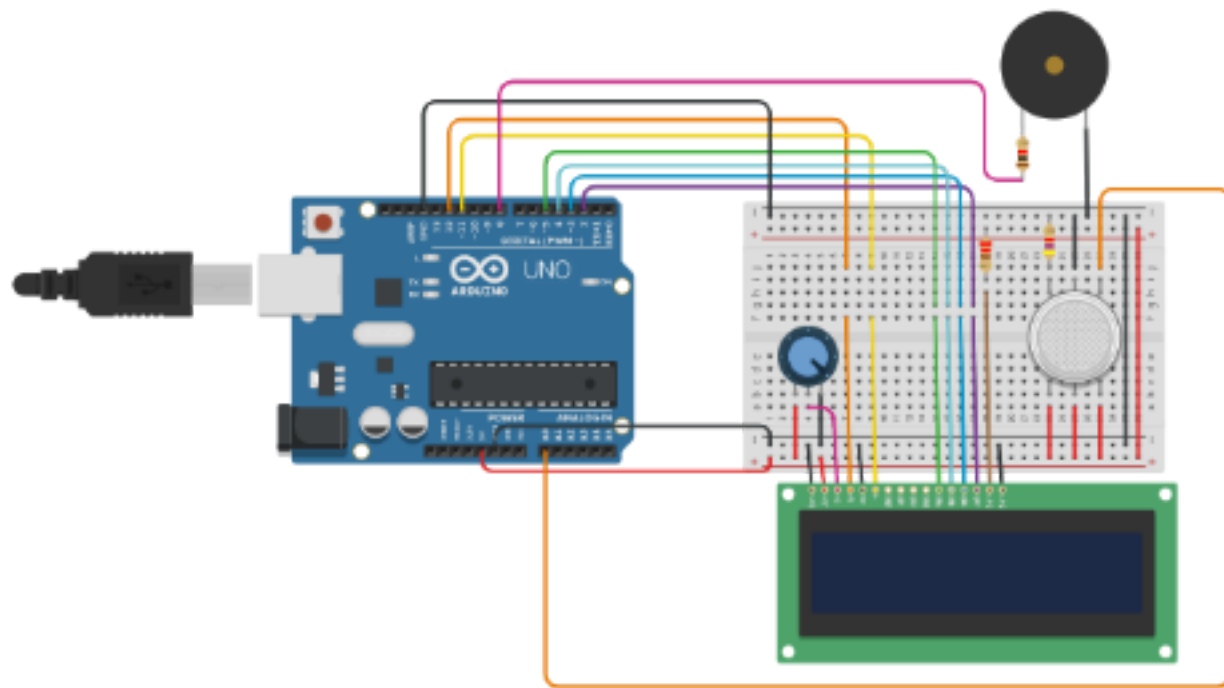
# calculating the score and the score is
96.15377360010211%
m2.score(train1, target)*100

# 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 .

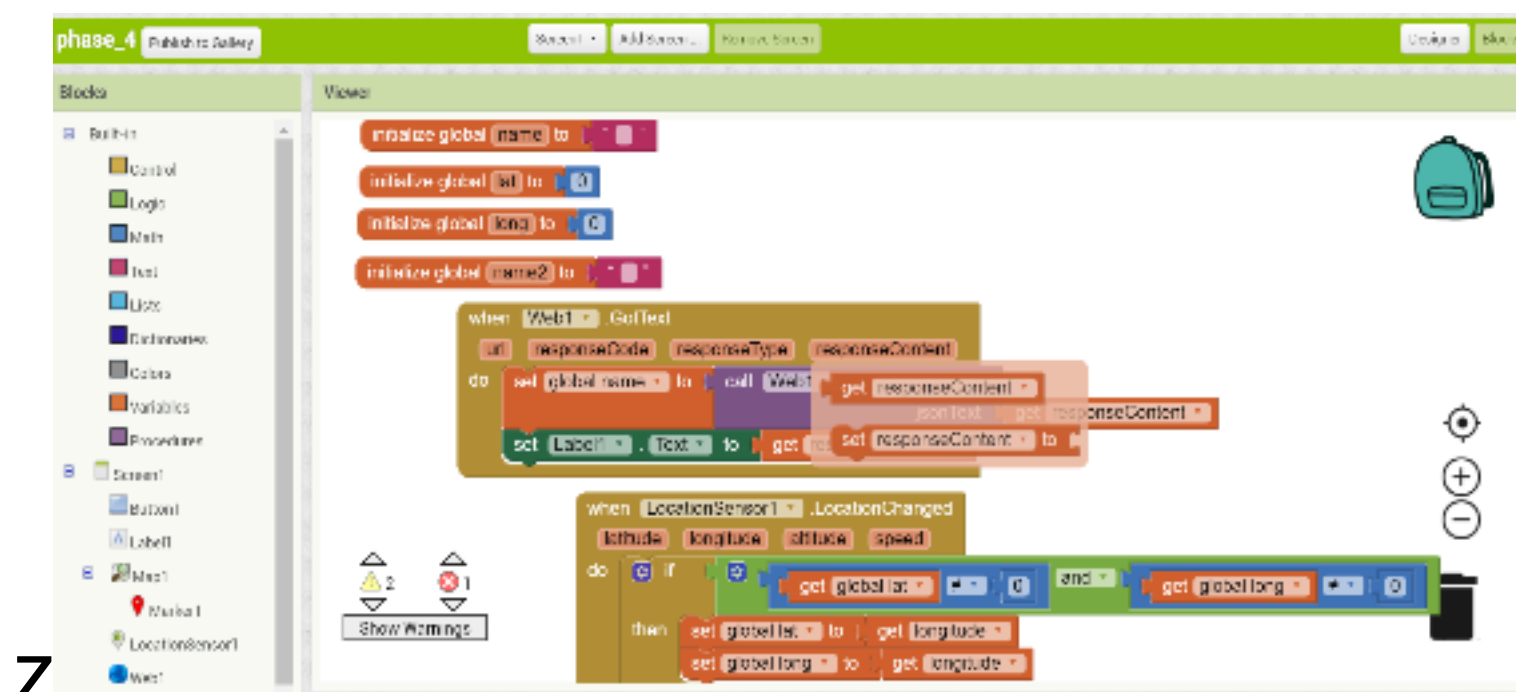
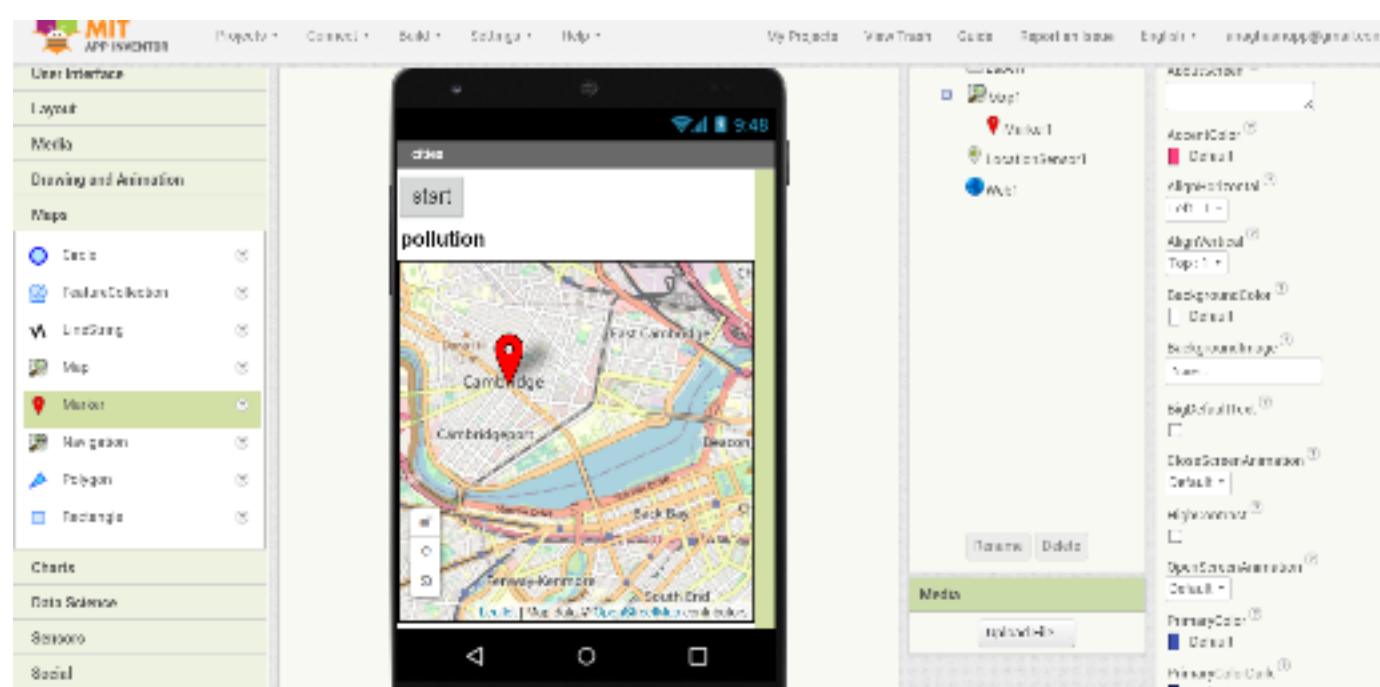
Data collection: The sensor continuously collect the data on air quality level . This can be done via weird or wireless communication such as wi-fi or cellular network

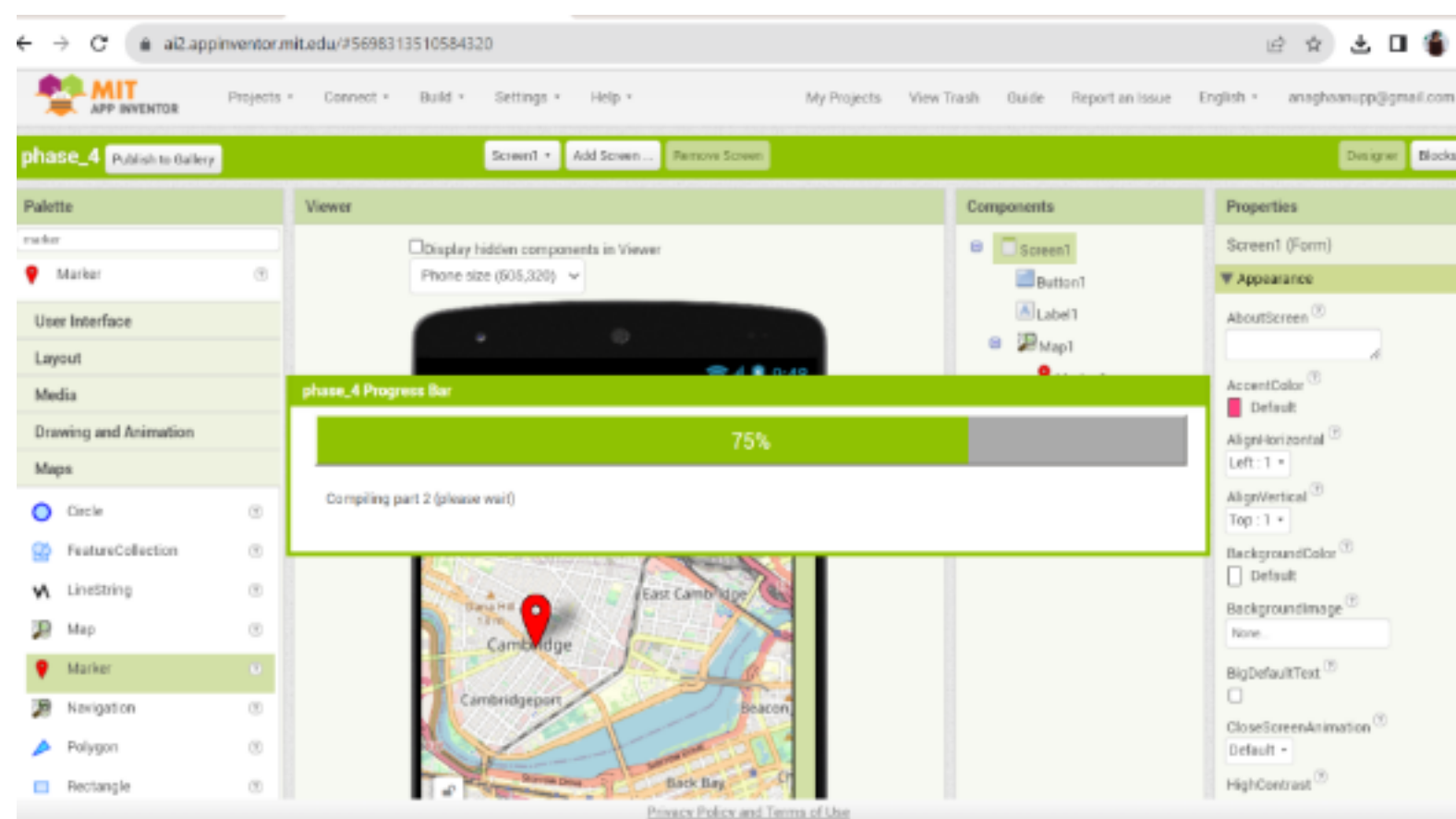
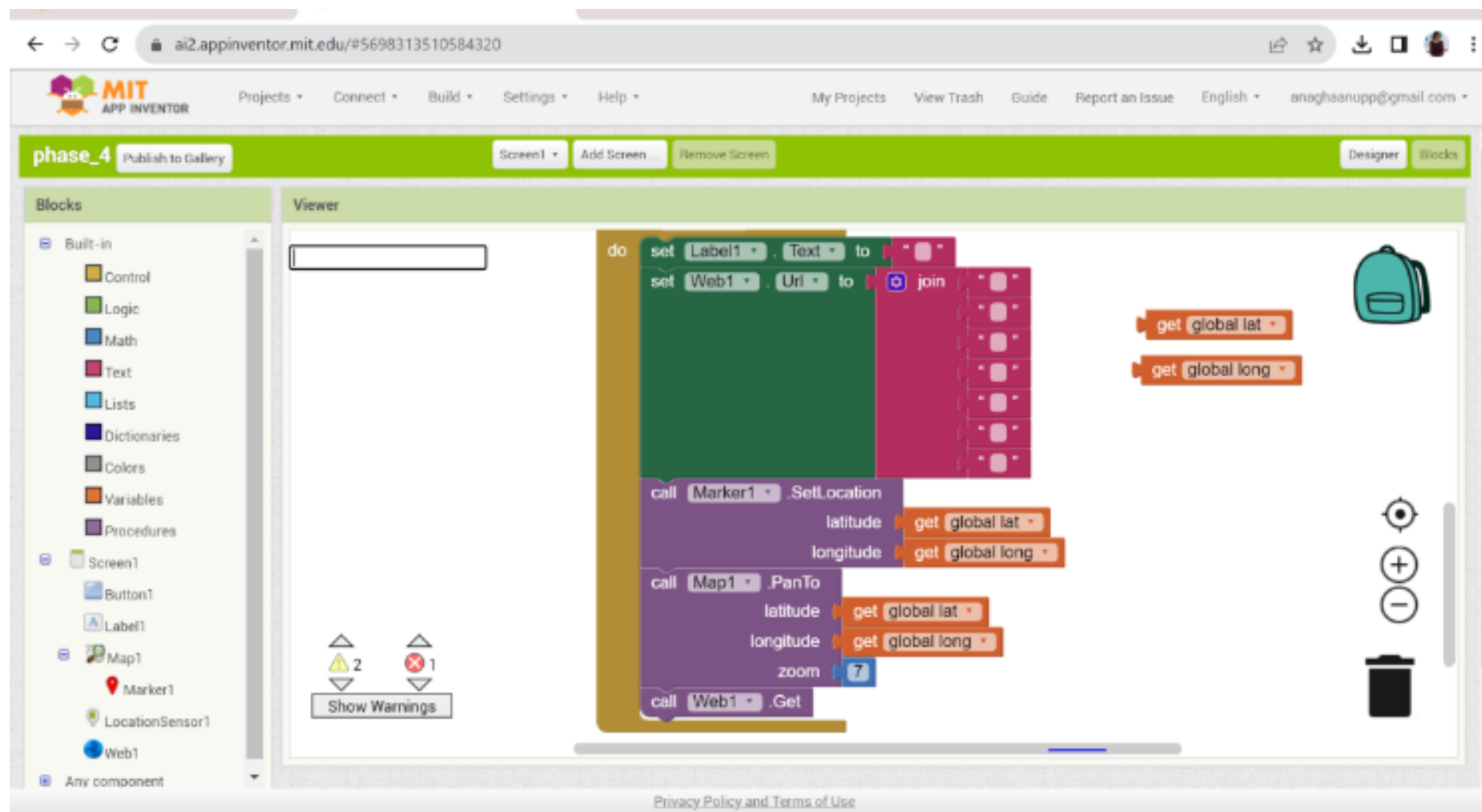
Data storage and Processing: The data is stored in a central database , either on cloud based server or local server, depending on the projects scale and requirements.

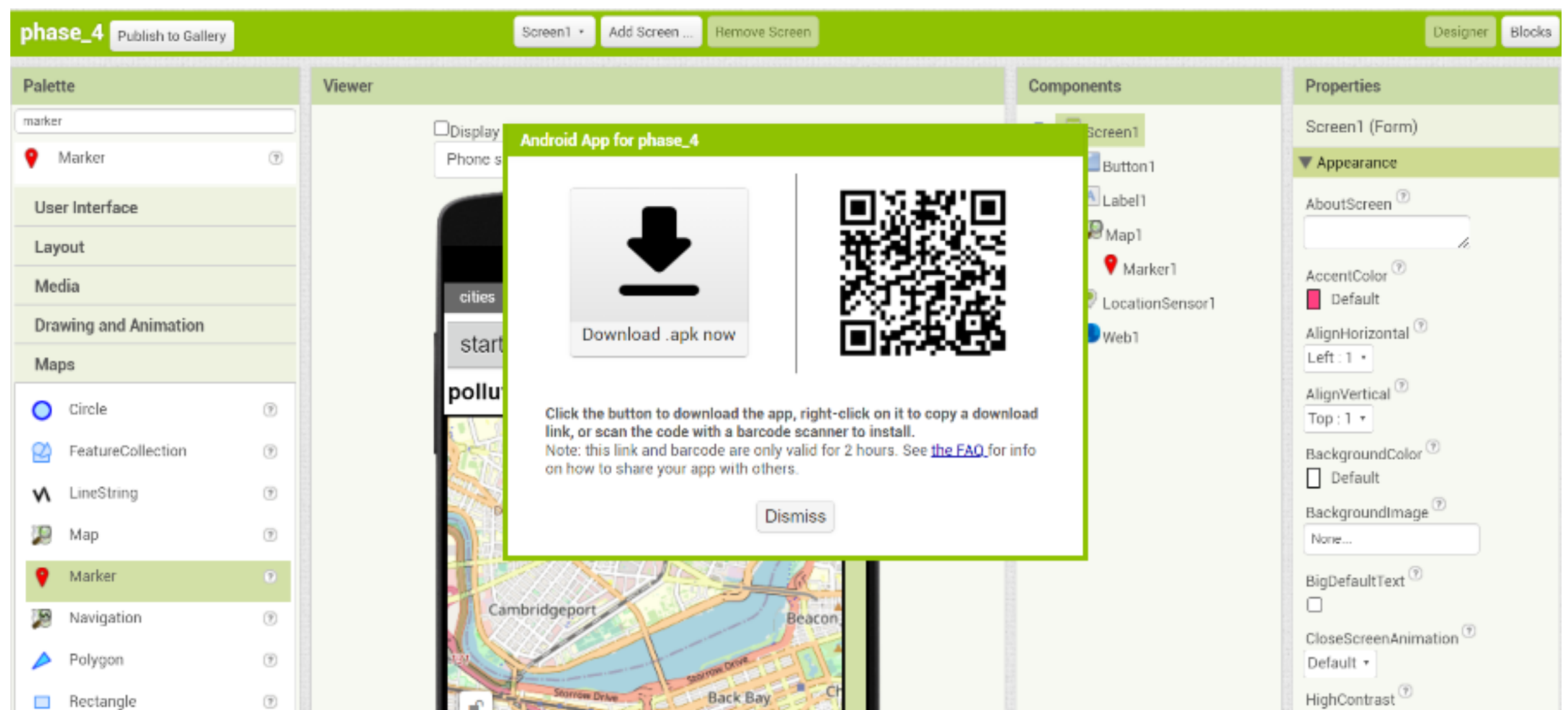
User Accessibility: The collection of air pollution data can be made accessible to the public through web portals mobile apps or public displays.

APPLICATION DEVELOPMENT:

For more convenience we have developed an application for monitoring air quality using “ MIT app inverter” .







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.