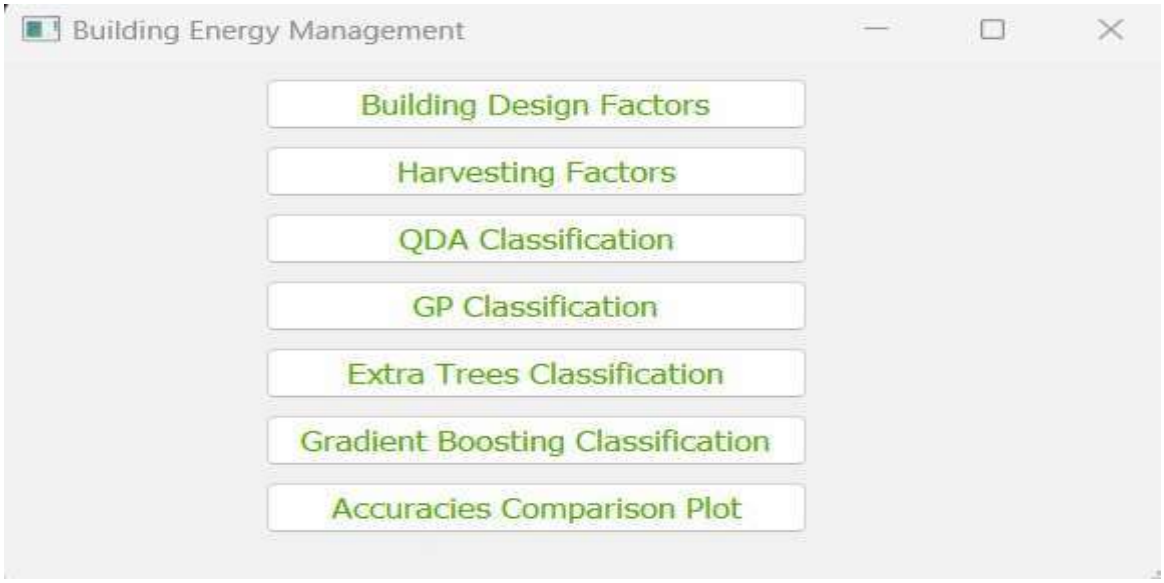
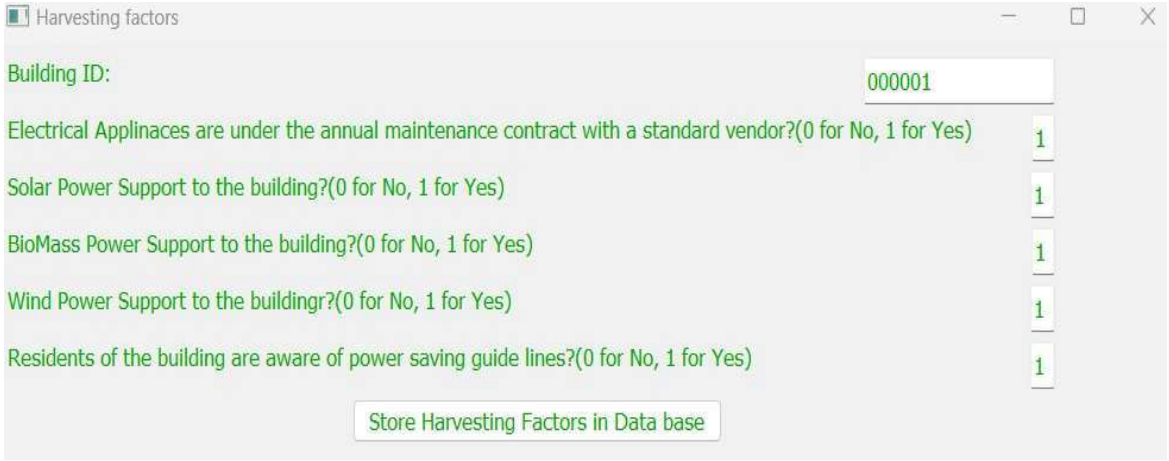
7. SYSTEM TESTING RESULTS

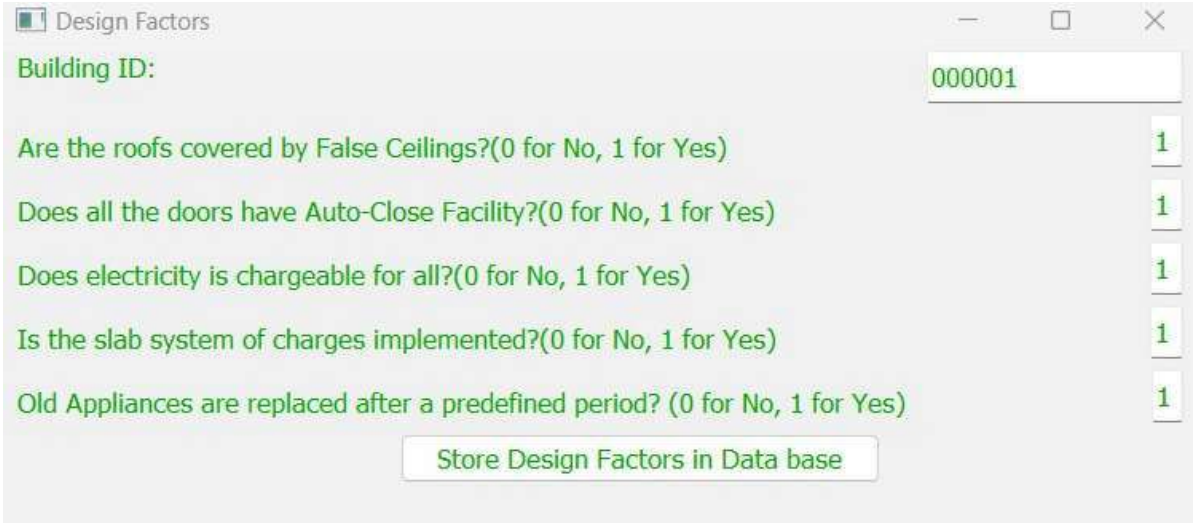


Screen 7.1: Output Screen -1

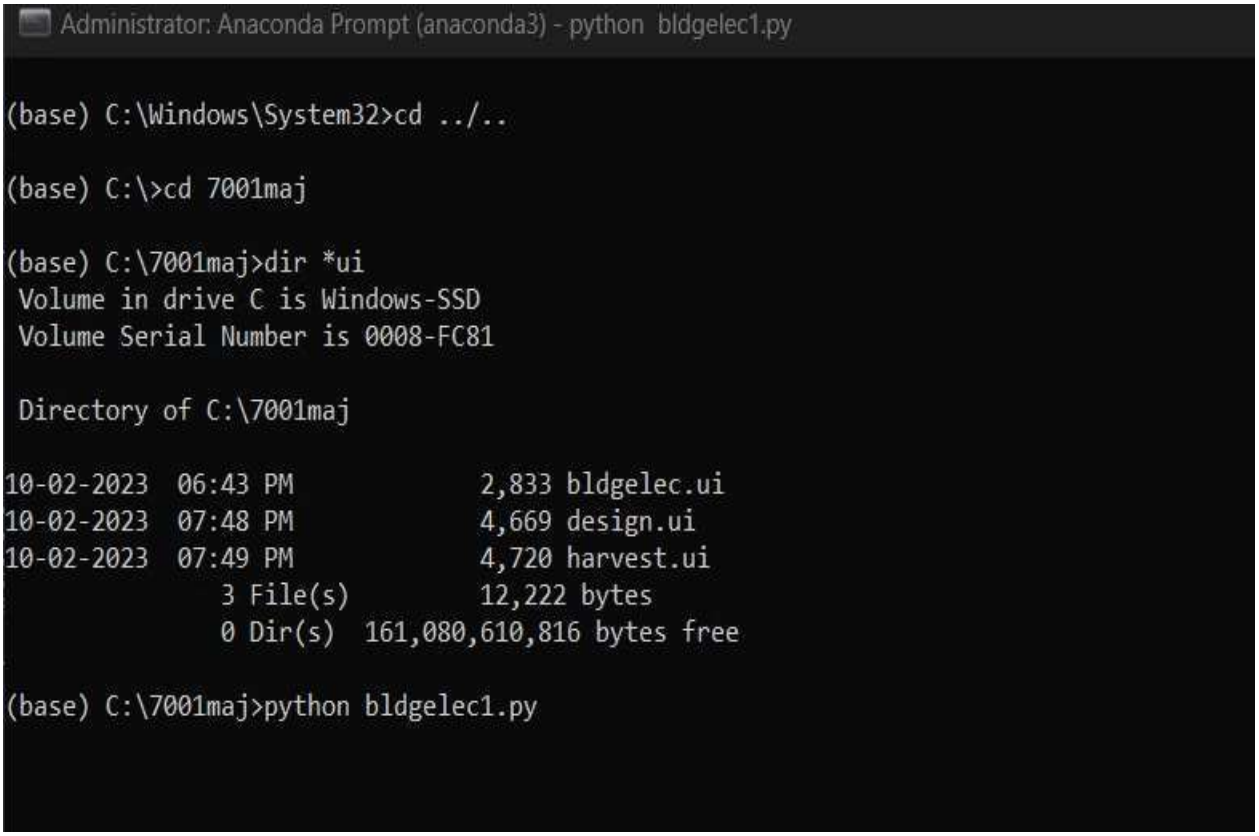
The following screen is the main screen. This screen contains the buttons that the user can click on to either give the input data or to compute the classification/tests to find out whether its optimized or not and to see the accuracies.



Screen 7.2: To Input the Harvesting Factors



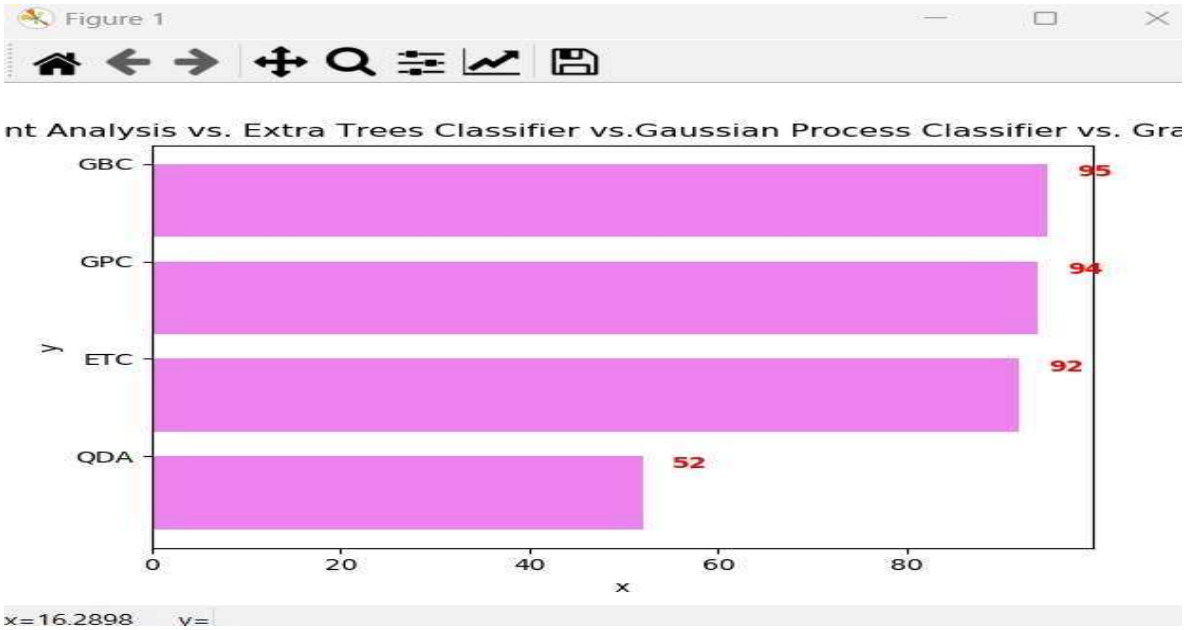
Screen 7.3: To Input the Design Factors



Screen 7.4: Run the Program

```
(base) C:\7001maj>python bldgelec1.py
The accuracy of QDA Classifier on testing data is: 52.32558139534884
QDA prediction on the first test set is: [1]
QDA prediction on the second test set is: [1]
The accuracy of GP Classifier on testing data is: 94.18604651162791
GPC prediction on the first test set is: [1]
GPC prediction on the second test set is: [0]
The accuracy of Extra Trees Classifier on testing data is: 93.4108527131783
ETC prediction on the first test set is: [1]
ETC prediction on the second test set is: [0]
The accuracy of GB Classifier on testing data is: 95.34883720930233
GBC prediction on the first test set is: [1]
GBC prediction on the second test set is: [0]
```

Screen 7.6: Testing of Data Accuracies And Output Of Each Classification



Screen 7.7: Comparison Plot Between the Different Classifications Done

8. RESULTS AND DISCUSSIONS

The results of the classification models were evaluated and compared as shown earlier. The proposed model achieved an accuracy of 95% when Gaussian Process classifier was used, indicating excellent performance among the other classifiers.

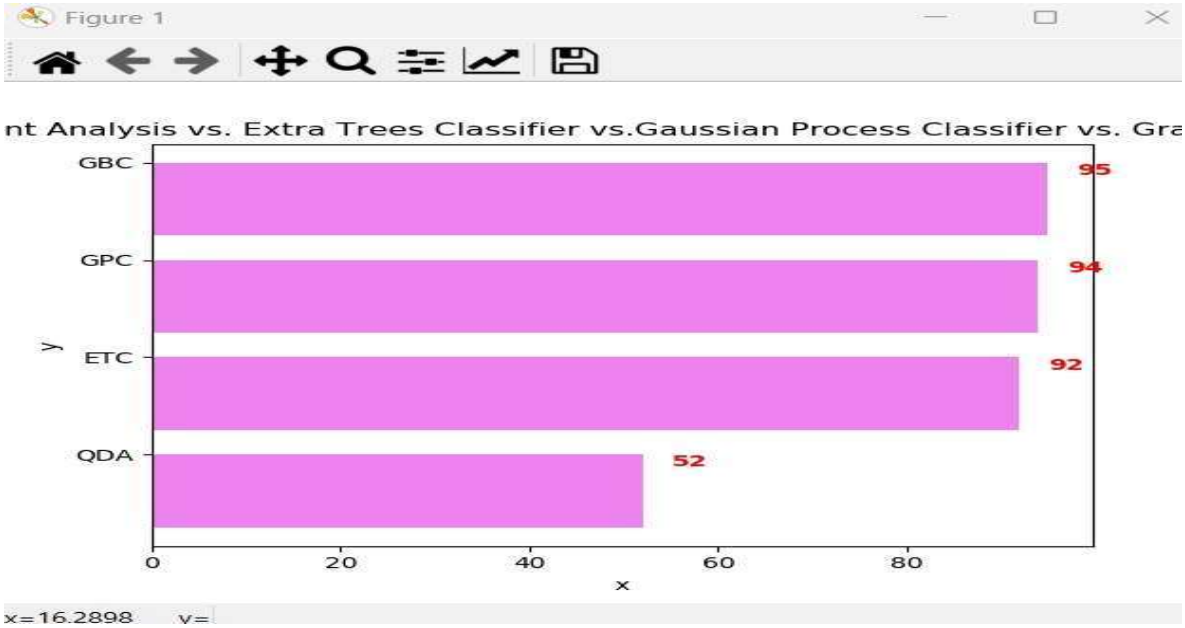


Figure 8.1: Comparison Plot Between the Different Classifications Done

These results demonstrate that the proposed model based on GPC classification model is effective in identifying whether the building energy management system is optimized or not.

```
(base) C:\7001maj>python bldgelec1.py
The accuracy of QDA Classifier on testing data is: 52.32558139534884
QDA prediction on the first test set is: [1]
QDA prediction on the second test set is: [1]
The accuracy of GP Classifier on testing data is: 94.18604651162791
GPC prediction on the first test set is: [1]
GPC prediction on the second test set is: [0]
The accuracy of Extra Trees Classifier on testing data is: 93.4108527131783
ETC prediction on the first test set is: [1]
ETC prediction on the second test set is: [0]
The accuracy of GB Classifier on testing data is: 95.34883720930233
GBC prediction on the first test set is: [1]
GBC prediction on the second test set is: [0]
```

Figure 8.2: Testing of Data Accuracies And Output Of Each Classification

By analyzing the energy usage data and identifying patterns and trends, GPC can provide accurate predictions of the building's energy usage and identify the optimal settings for the BEMS. This can help reduce energy consumption, minimize energy costs, and achieve sustainability. GPC is a flexible and adaptable model that can handle different types of data and adapt to new situations, making it an ideal tool for BEMS optimization.