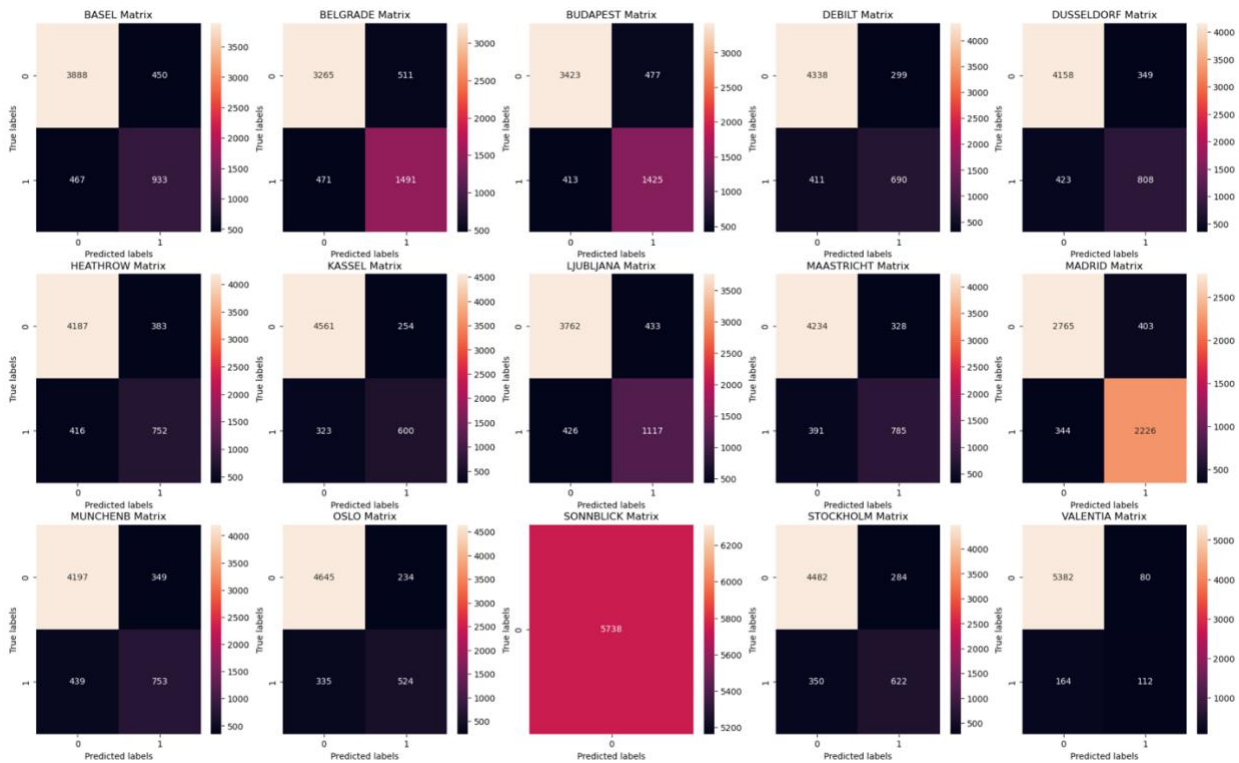


Exercise 1.4: Supervised Learning Algorithms Part 1.



Weather Station	Accurate Prediction		False Positive	False Negative	Accurate Rate
Basel	3888	933	450	467	84%
Belgrade	3265	1491	511	471	83%
Budapest	3423	1425	477	413	84%
Debilt	4338	690	299	411	88%
Dusseldorf	4158	808	349	423	86%
Heathrow	4187	752	383	416	86%
Kassel	4561	600	254	323	90%
Ljubljana	3762	1117	433	426	85%
Maastricht	4234	785	328	391	87%
Madrid	2765	2226	403	344	87%
Munchenb	4197	753	349	439	86%
Oslo	4645	524	234	335	90%
Sonnblick	5738	0	0	0	100%
Stockholm	4482	622	284	350	88%
Valentia	5382	112	80	164	95%
				Average	88%

Write a paragraph answering the following questions:

1. How well does this algorithm predict the current data?
2. Are any weather stations fully accurate? Is there any overfitting happening?
3. Are there certain features of the data set (such as particular weather stations) that might contribute to the overall accuracy or inaccuracy?

Ans: The weather prediction model exhibits varying accuracy across different stations, with Sonnblick achieving a perfect 100% accuracy in predicting unpleasant weather. While this suggests the model performs well when encountering familiar patterns, it raises concerns about its ability to generalize effectively. The stark accuracy differences between locations, such as Madrid's struggles with predicting pleasant weather, indicate inconsistencies in performance across different climates and geographies. The perfect accuracy at Sonnblick suggests possible overfitting, where the model may have learned patterns too specific to the training data, making it less adaptable to new conditions. This lack of generalizability highlights the need for a more diverse training dataset that represents a wider range of weather conditions. The current 88% overall accuracy may overstate the model's reliability, as it does not account for these inconsistencies. To improve its forecasting ability, the model should be trained on a more varied dataset, refined to better handle different weather patterns, and evaluated with methods like cross-validation to ensure robustness. While the model shows promise, particularly for specific locations, enhancing its diversity and adaptability would lead to more reliable and practical weather predictions.