Rationale

MAP

A map was used to store all the data entries of each file. This was done to make sure no duplicates are repeated in the data storage. A Map was used instead of a BST because the map is stored as a balanced tree meaning it is quicker to access data and can contain more data. A key was made up of the day, month, year, minutes, and hours.

Pros	Cons
Balanced (more efficient)	Find function can only be used on key
Able to search quickly	Does not store duplicates
Does not store duplicates	

MULTIMAP

A multimap was used to gather information about the highest solar radiation for option 5. This allowed for multiple duplicate values of solar radiation. This meant that the program could print multiple times for one maximum solar radiation value.

Pros	Cons
Balanced (more efficient)	Find function can only be used on key
Able to search quickly	Stores duplicates
Stores duplicates	

BINARY SEARCH TREE

A binary search tree was used to store a key made up of the day, month, and year. This tree was used to search if a certain date existed within the data set before doing anything else. The BST was used instead of the Map because the map contains multiple similar dates with varying time which would make it less efficient. A secondary map could be used however the specifications required the use of a BST. If a secondary map were used it would increase efficiency as it is balanced. The current BST is not balanced due to complexity and time constraints.

Pros	Cons
Able to search quickly	Not balanced (less efficient)
Can search any data within tree	Does not store duplicates
Does not store duplicates	Can only store one piece of data

VECTOR

Vectors were used in the calculations of the data. This was because the data had to be read element by elements so there was note need for search or efficiency for the calculations.

Pros	Cons
Simple to use	Cannot search quickly compared to MAP and BST
Stores duplicates	Stores duplicates
Easy to traverse	Cannot search for data efficiently