## Data Dictionary

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Protection | Description |
| Date | Class |  | Represents a Date Class. |
| m\_day | unsigned | - | An unsigned day of a date. |
| m\_month | unsigned | - | An unsigned month of a date. |
| m\_year | unsigned | - | An unsigned year of a date. |
| Date() | procedure | + | Sets the day, month, and year to 0. |
| Date(day, month, year) | procedure | + | Sets a specific day, month, and year. |
| GetDay() | query | + | Gets the day of a date. |
| GetMonth() | query | + | Gets the month of a date. |
| GetYear() | query | + | Gets the year of a date. |
| SetDay(unsigned day) | procedure | + | Sets the day of a date. |
| SetMonth(unsigned month) | procedure | + | Sets the month of a date. |
| SetYear(unsigned year) | procedure | + | Sets the year of a date. |
| GetMonthInStr(month) | string | + | Retrieves the string month from a numeric number. |
| &operator << (ostream, date) | query | + | Format Date object, inserts into output stream. |
| &operator >> (istream, date) | query | + | Reads a Date Object from input stream. |

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Protection | Description |
| Time | Class |  | Represents a Time Class. |
| m\_hour | unsigned | - | An unsigned hour of a time. |
| m\_minute | unsigned | - | An unsigned minute of a time. |
| Time() | procedure | + | Sets the hour, and minute to 0. |
| Time(hour, minute) | procedure | + | Sets a specific hour, and minute. |
| GetHour() | query | + | Gets the hour of a time. |
| GetMinute() | query | + | Gets the minute of a time. |
| SetHour(unsigned hour) | procedure | + | Sets the hour of a time. |
| SetMinute(unsigned minute) | procedure | + | Sets the minute of a time. |
| &operator << (ostream, time) | query | + | Format Time object, inserts into output stream. |
| &operator >> (istream, time) | query | + | Reads a Time Object from input stream. |

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Protection | Description |
| Measurement | Class |  | Represents an Measurement Class. |
| m\_measurement | float | - | A float measurement of an observation. |
| Measurement () | procedure | + | Sets the measurement to 0.0 |
| Measurement(measurement) | procedure | + | Sets a specific measurement. |
| GetMeasurement() | query | + | Gets the measurement of an observation. |
| SetMeasurement(measurement) | procedure | + | Sets the measurement of an observation. |
| GetMean(sum, count) | procedure | + | Calculates the mean (average). |
| GetVariance(variance, squareDistance, mean) | procedure | + | Calculates the variance. |
| GetStandardDeviation(variance, count) | procedure | + | Calculates the sample standard deviation. |

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Protection | Description |
| WindSpeed | Class |  | Represents a WindSpeed Class. |
| WindSpeed() | procedure | + | Sets the wind speed measurement to 0.0 |
| WindSpeed(measurement) | procedure | + | Sets a specific wind speed measurement. |
| &operator << (ostream, W) | query | + | Format WindSpeed object, inserts into output stream. |
| &operator >> (istream, W) | query | + | Reads a WindSpeed Object from input stream. |

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Protection | Description |
| SolarRadiation | Class |  | Represents a SolarRadiation Class. |
| SolarRadiation() | procedure | + | Sets the solar radiation measurement to 0.0 |
| SolarRadiation(measurement) | procedure | + | Sets a specific solar radiation measurement. |
| &operator << (ostream, SR) | query | + | Format SolarRadiation object, inserts into output stream. |
| &operator >> (istream, SR) | query | + | Reads a SolarRadiation Object from input stream. |

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Protection | Description |
| Temperature | Class |  | Represents a Temperature Class. |
| Temperature() | procedure | + | Sets the temperature measurement to 0.0 |
| Temperature(measurement) | procedure | + | Sets a specific temperature measurement. |
| &operator << (ostream, TEMP) | query | + | Format Temperature object, inserts into output stream. |
| &operator >> (istream, TEMP) | query | + | Reads a Temperature Object from input stream. |

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Protection | Description |
| Processor | Class |  | Represents a Processor Class. |
| s\_instance | Processor | - | Static Processor type instance member variable. |
| m\_dataRead | unsigned | - | An unsigned data records read count. |
| m\_dataInserted | unsigned | - | An unsigned saved record count. |
| Processor() | Constructor | - | Default Constructor. |
| LoadDisplatCount() | procedure | - | Display count status. |
| LoadCSVFilePathToVector(  csvFilePath, input, filename) | procedure | + | Reads the csv file path from the txt file. |
| LoadCSVDataToVector(  csvFilePath, windRecTypeVec,  windRecType) | procedure | + | Reads all the csv file paths data. |

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Protection | Description |
| WindRecType | Class |  | Represents a WindRecType Class. |
| m\_date | Date | - | A Date of a Wind Record Type. |
| m\_time | Time | - | A Time of a Wind Record Type. |
| m\_windSpeed | WindSpeed | - | A WindSpeed of a Wind Record Type. |
| WindRecType() | procedure | + | Sets the date, time, and windspeed to default value. |
| WindRecType(date, time, windspeed) | procedure | + | Sets a specific date, time, and windspeed. |
| GetRecordDate() | query | + | Gets the date of a Wind Record Type. |
| GetRecordTime() | query | + | Gets the time of a Wind Record Type. |
| GetRecordWindSpeed() | query | + | Gets the wind speed of a Wind Record Type. |
| SetRecordDate (Date date) | procedure | + | Sets the record date of a Wind Record Type. |
| SetRecordTime (Time time) | procedure | + | Sets the record time of a Wind Record Type. |
| SetRecordWindSpeed(  WindSpeed windspeed) | procedure | + | Sets the record wind speed of a Wind Record Type. |
| &operator << (ostream, WST) | query | + | Format WindRecType object, inserts into output stream. |
| &operator >> (istream, WST) | query | + | Reads a WindRecType Object from input stream. |

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Protection | Description |
| Menu | Class |  | Represents a Menu Class. |
| ProcessData  (recordVec, WRT, processor) | procedure | + | Sets the processes data using specific vector, WindRecType, and processor. |
| Run() | procedure | + | Runs Menu functionaility. |
| MenuList() | procedure | + | Runs the list of the Menu. |
| EnterRequired() | procedure | + | Runs a description of entering ENTER to the user. |
| ClearScreen() | procedure | + | Clears the screen of each option completion. |

## Test Plan

Date Class

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test | Description | Actual Test Call | Expected Output | Passed |
| 1 | Default constructor initializes date to 0/0/0 | `Date myDate;` | `myDate.GetDay() == 0`,  `myDate.GetMonth() == 0`,  `myDate.GetYear() == 0` | Yes |
| 2 | Constructor sets a specific date. | `Date paramDate(11,12,2002)` | `paramDate.GetDay() == 11`,  `paramDate.GetMonth() == 12`,  `paramDate.GetYear() == 2002` | Yes |
| 3 | SetDay method updates the day | `Date myDate;  myDate.SetDay(1);` | `myDate.GetDay() == 1` | Yes |
| 4 | SetMonth method updates the month | `Date myDate;  myDate.SetMonth(2);` | `myDate.GetMonth() == 2` | Yes |
| 5 | SetYear method updates the year | `Date myDate;  myDate.SetYear(2021);` | `myDate.GetYear() == 2021` | Yes |
| 6 | Convert the numeric month to String | `Date myDate;  myDate.SetMonth(2);` | `myDate.GetMonthInStr(myDate.GetMonth()) == “February” | Yes |
|  | | | | |

Time Class

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test | Description | Actual Test Call | Expected Output | Passed |
| 1 | Default constructor initializes time to 0:0 | `Time myTime;` | ` myTime.GetHour() == 0`,  ` myTime.GetMinute() == 0` | Yes |
| 2 | Constructor sets a specific time. | `Time paramTime(11,12)` | ` paramTime.GetHour() == 11`,  ` paramTime.GetMinute() == 12` | Yes |
| 3 | SetHour method updates the hour | `Time myTime;  myTime.SetHour(1);` | `myTime.GetHour() == 1` | Yes |
| 4 | SetMinute method updates the month | `Time myTime;  myTime.SetMinute(20);` | `myDate.GetMinute() == 20` | Yes |
|  | | | | |

Measurement Class

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test | Description | Actual Test Call | Expected Output | Passed |
| 1 | Default constructor initializes measurement to 0:0 | `Measurement myMeasurement;` | ` myMeasurement.GetMeasurement() == 0.0` | Yes |
| 2 | Constructor sets a specific time. | `Measurement myMeasurement(12.5)` | ` myMeasurement.GetMeasurement() == 12.5` | Yes |
| 3 | SetMeasurement method updates the measurement | `Measurement myMeasurement;`  myMeasurement.SetMeasurement(14.5);` | `myMeasurement.GetMeasurement() == 14.5` | Yes |
| 4 | GetMean method updates the month | `myMeasurement.GetMean(16,2)` | `myMeasurement.GetMeasurement() == 16.2` | Yes |
|  | | | | |

WindSpeed Class

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test | Description | Actual Test Call | Expected Output | Passed |
| 1 | Default constructor initializes windspeed measurement to 0:0 | `WindSpeed windSpeed;` | ` windSpeed.GetMeasurement() == 0.0` | Yes |
| 2 | Constructor sets a specific time. | `WindSpeed paramWindSpeed(12.12)` | ` windSpeed.GetMeasurement() == 12.12` | Yes |
| 3 | SetMeasurement method updates the measurement | `WindSpeed paramWindSpeed;`  paramWindSpeed.SetMeasurement(24.35);` | `windSpeed.GetMeasurement() == 24.35` | Yes |
|  | | | | |

SolarRadiation Class

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test | Description | Actual Test Call | Expected Output | Passed |
| 1 | Default constructor initializes solarRadiation measurement to 0:0 | `SolarRadiation solarRadiation;` | ` solarRadiation.GetMeasurement() == 0.0` | Yes |
| 2 | Constructor sets a specific time. | `SolarRadiation paramSolarRadiation(11.11)` | ` solarRadiation.GetMeasurement() == 11.11` | Yes |
| 3 | SetMeasurement method updates the measurement | `SolarRadiation paramSolarRadiation;`  paramSolarRadiation.SetMeasurement(22.22);` | `solarRadiation.GetMeasurement() == 22.22` | Yes |
|  | | | | |

Temperature Class

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test | Description | Actual Test Call | Expected Output | Passed |
| 1 | Default constructor initializes temperature measurement to 0:0 | `Temperature myTemp;` | ` temperature.GetMeasurement() == 0.0` | Yes |
| 2 | Constructor sets a specific time. | `Temperature paramTemp(11.11)` | ` paramTemp.GetMeasurement() == 11.11` | Yes |
| 3 | SetMeasurement method updates the measurement | `Temperature paramTemp;`  paramTemp.SetMeasurement(22.22);` | `paramTemp.GetMeasurement() == 22.22` | Yes |
|  | | | | |

Processor Class

|  |
| --- |
|  |