You are required to provide a production ready solution (Console Application) written in C# using Visual Studio for the following requirements.

An XML file containing generator data (see accompanying file *GenerationReport.xml*) is produced and provided as input into an input folder on a regular basis. The solution is required to automatically pick up the received XML file as soon as it is placed in the input folder (location of input folder is set in the Application *app.config* file), perform parsing and data manipulation as appropriate to achieve the following:

1. It is required to calculate and output the total **Generation Value** for each generator.
2. It is required to calculate and output the generator with the highest **Daily Emissions** for each day along with the emission value.
3. It is required to calculate and output **Actual Heat Rate** for each coal generator.

The output should be a single XML file in the format as specified by an example accompanying file *GenerationOutput.xml* into an output folder (location of output folder is set in the Application *app.config* file).

**Calculation Definitions and Reference Data**

**Daily Generation Value** = *Energy* x *Price* x *ValueFactor*

**Daily Emissions** = *Energy* x *EmissionRating* x *EmissionFactor*

**Actual Heat Rate** = *TotalHeatInput* / *ActualNetGeneration*

Emissions only apply to fossil fuel generator types e.g. coal and gas. There could be a varying number of generators in any one *GenerationReport.xml* file that is produced.

**ValueFactor** and **EmissionsFactor** is static data sourced from the accompanying XML file *ReferenceData.xml*. Note: it is not possible to change static data while the console application is running.

**Generator Types** map to **factors** as follows:

|  |  |  |
| --- | --- | --- |
| **Generator Type** | **ValueFactor** | **EmissionFactor** |
| Offshore Wind | Low | N/A |
| Onshore Wind | High | N/A |
| Gas | Medium | Medium |
| Coal | Medium | High |