Verivox task

# Technical requirements

Develop a model for solution that takes for input

* Consumption of electricity (kWh/year).

that have following Products with their parameters

1. Product A
   1. Tariff Name: “basic electricity tariff”
   2. Cost per month: 5 EUR
   3. Consumption costs: 0.22 EUR/kWh
2. Product B
   1. Tariff Name: “Packaged tariff”
   2. Cost per year: 800 EUR
   3. Consumption limit: 4000 kWh
   4. Consumption costs over limit: 0.30 EUR/kWh

that return a list of Products with columns

* Tariff Name
* Annual Costs (EUR/year)

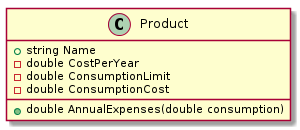
with a set of rows to compare prices in different consumption rates.

# Solution

## Model

For products described it is possible to build a common model “Product”

Figure 1. Common model for both Products



where

|  |  |  |  |
| --- | --- | --- | --- |
| Property | Description | Product A | Product B |
| Name | Tariff name | basic electricity tariff | Packaged tariff |
| CostPerYear | Basic cost of tariff for one year | 5\*12 = 60 EUR | 800 EUR |
| ConsumptionLimit | Amount of energy to be covered with basic CostPerYear | 0 kWh | 4000 kWh |
| ConsumptionCost | Price for each kWh after ConsumptionLimit | 0.22 EUR/kWh | 0.30 EUR/kWh |

## Algorithm

We can easily create a common formula to calculate annual expenses for model above

,

where

* E – annual costs
* Ctotal – total consumption of electricity, kWh
* Climit – amount of electricity included in basic price, kWh
* P – price for kWh over consumption limit, EUR
* A – basic price for tariff
* H(x) – Heaviside step function

*Considering all above we could create a single Product class for both products and use it as our solution.*

*However, I thought what if we will have other products in future? What if those products won’t align with the common formula for annual costs? Let’s update our model to following*

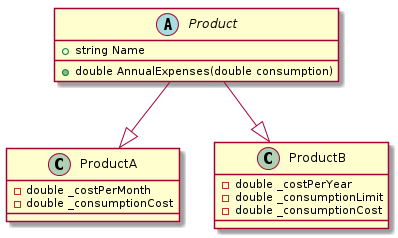


Figure 2. Updated model for Products

where

* consumption ≥ 0.0

## Solution. I/O

Solution for this task must be developed as a Console app. For cross platform possibilities, let’s stay with .NET Core.

Input must be implemented via Console input.

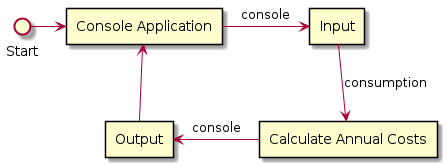
Output must be implemented as a formatted text via Console output.

Figure 3. Application flow

At the end we have the following process diagram