**Energy Audit:**

**Description of problem:**

As part of Energy Informatics I am required to conduct an energy audit of my home. I will do this by writing a c program that has two parts to it – a top down and a bottom up approach.

The top down approach will read in the average annual electricity and heating oil bill then convert these using current costs per kWhr to kWhrs.

The bottom up approach will read in the number of various appliances, their average usage per day and wattage then calculate this value in kWhrs for a year. The cost for each appliance for a year will be combined and then I will compare the figure I get with the kWhr equivalent I calculate in the top down approach to see how much electrical usage I can account for in my home.

**Home Profile:**

My family home is a two storey house. It is located in a small village in a rural area. My great grandparents arranged the construction of the house in 1912 and so it is just over 100 years since its initial construction. The building material used at the time was stone.

In 1986 my grandparents had the house extended. This time blocks of concrete were used instead of stone. So, our house is essentially two different builds combined to form our house today. Needless to say the newer portion of the house is more energy efficient as the construction methods improved through the years. There is a noticeable temperature decrease as one moves into the older part of the house.

The house comprises of two floors with 4 rooms located on the ground floor and 6 rooms located on the first floor, along with two relatively large hallways.

Over the years different measures have been implemented to make the house more energy efficient.

Our electricity provider is Airtricity and the main source of heating in our home is kerosene. There are a total of 10 radiators located throughout the house which are responsible for keeping the house warm.

**Energy Use:**

Due to the size of my family only consisting of myself and my parents, our energy use is not extremely high. I would say that we are roughly average when it comes to energy usage. We don’t go out of our way to spare energy, but we don’t waste it either. We simply use it when we need it.

Due to the small family size we usually do 3 to 4 washing loads per week. We rarely make use of the tumble dryer as we have a clothesline in our garden which is what we mostly use to dry the clothes.

Kerosene is our main provider of energy. Our radiators are on turned on when needed as not all rooms are used each day.

The house is rarely empty so energy is constantly being used.

The main appliances responsible for the energy consumption include:

2 43 inch plasma TVs, 2 computers, electric shower, washing machine, tumble dryer, electric cooker, small chest freezer, fridge freezer, vacuum cleaner, microwave and kettle.

The vast majority of these are used every day and due to their high energy consumption rates they are responsible for a large proportion of our electrical energy usage.

**Energy Efficiency:**

**Measures which have been implemented to improve energy efficiency include:**

* Insulated attic 2 years ago
* Double glazed windows
* Heating system on timer
* Radiators can be turned off and their temperature set individually

Just over two years ago the attic was insulated. Given that our attic is not used as a room it seemed like a great approach to becoming more energy efficient. Now upstairs is noticeably better at retaining warmth.

All our windows are doubled glazed. This feature helps the house retain heat and helps reduce our energy bills.

Our central heating system is on a timer. This ensures that the heat is only on during the times it is needed. We can easily keep track of the times it is used and alter the heating pattern based on our needs.

Our radiators can be operated independently of each other, so, only the required radiators are used. This has proven to be a great assistance in making our home more energy efficient.