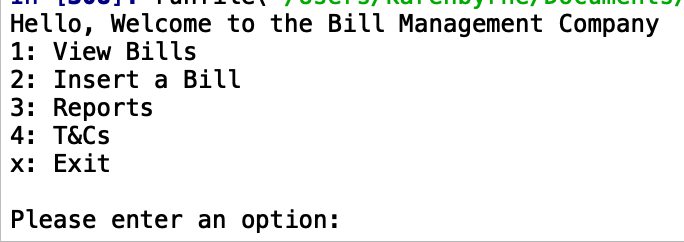
**Overview**

This is a program which provides the user the opportunity to read and input bills. It also provides various reports for these bills based off of the users input.

**Welcome Menu**

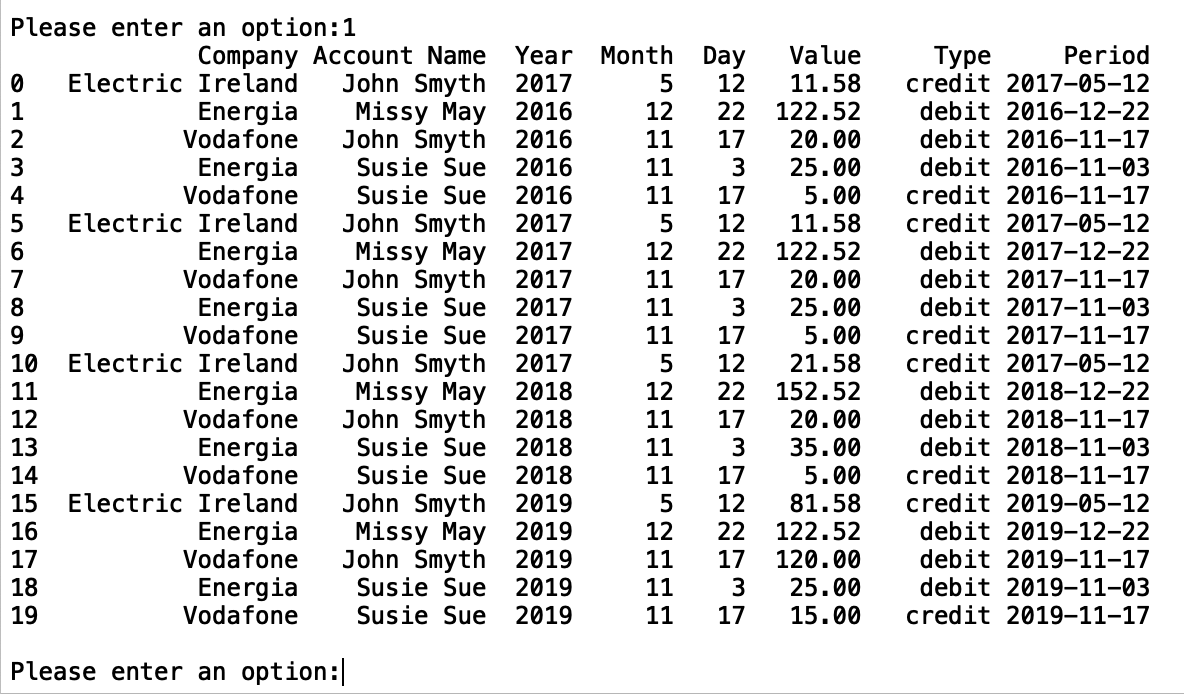
When you open the program, you will be greeted with the welcome menu:



**Instructions for use**

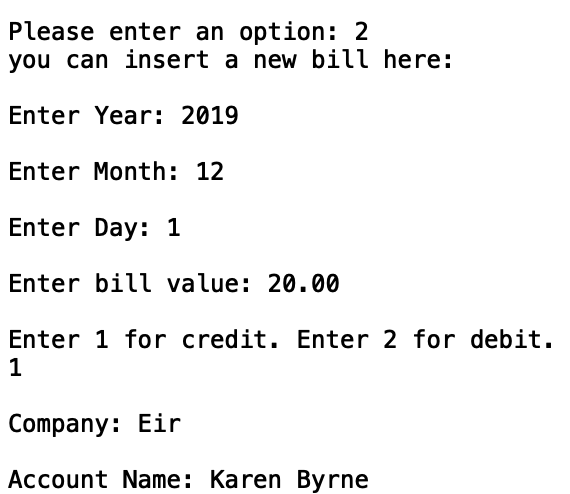
Here you are provided with the options.

**Viewing the dataset:** If you wish to view the bills you should insert ‘1’, this provides the following output; a panda’s data frame of all bills inside the csv file with the column’s names added. Along with this there is also an additional column added – ‘Period’. This column is a concatenation of year-month-day:



You are then prompted to add another option. If you wish to discover more inside the program you can press ‘3’ or ‘4’. If you wish to add a bill, you should input ‘2’.

**Adding a new bill:** If you enter the value ‘2’ you will be given the option to add a new bill to the dataset. This asks for all the inputs the dataset requires.

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The system prompts you to enter year, this will only accept a number, up until the current year. Otherwise you will get an error.

Then, you will be asked to enter the month, here the only accepted option is between 1-12, again an error will be given if you input otherwise.

The final date input is the day, based on your input for year and month you are only permitted to enter a real day date. Ie. If you have inputted 29th day for February, this will only be permitted if the year input was a leap year.

A screenshot of a cell phone

Description automatically generated

You are then requested to add a value for the bill, here, only a numeric input is accepted. Negative values are also accepted as returns/repayments are also possible.

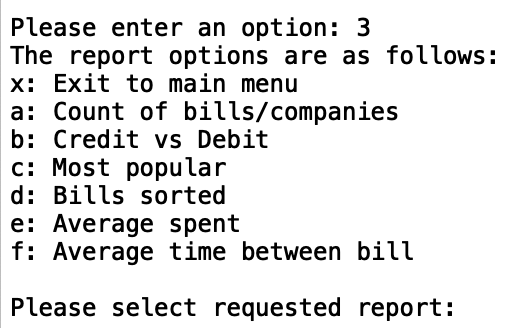
You will be asked to differentiate between a debit and credit bill, to do this you should enter a ‘1’ - credit or a ‘2’ – debit. No other input will be accepted.

Finally, you will be asked to input the bills company name and the name of the customer. This accepts any numeric or character input.

You can enter multiple new bills one after the other, however, if you want to view reports based off of these bills you need to exit and re-enter the program.



**Reports:** If you input ‘3’ to the main menu view you will be given the option to view the reports for the dataset. You will be given a sub-menu which you can see below. If you wish to exit the submenu at any time you can input ‘x’.



In order to view the number of bills and the count of unique companies in the dataset you should enter ‘a’.

This provides the following output:



After this you will be out in the main menu again. In order to view additional reports, you must enter ‘3’ again.

If you press ‘b’ you will see some information from credit vs debit. This displays the largest value for credit and debit bills in the dataset.

It then displays the total value of credit and debit bills per year in the dataset.

A screenshot of a cell phone

Description automatically generated

Adding ‘c’ as input will give you the most popular company – based on the one with the most amount of bills entered in the dataset. It will also give the count of bills for all companies in the dataset.

A close up of a device

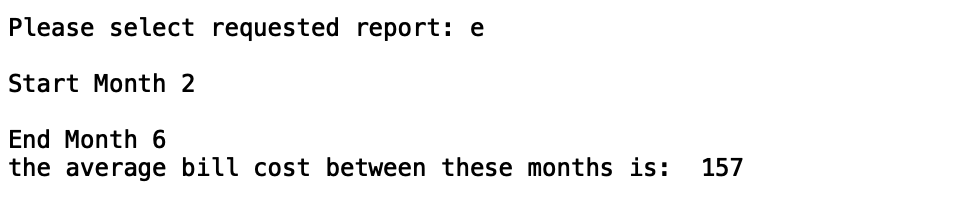
Description automatically generated

Inputting ‘d’ will return the entire dataset but sorted based on the date of the bill. This was sorted based on ‘Period’, the new column which was added at the start of the program.

A close up of text on a white background

Description automatically generated

If you enter ‘e’ you will be prompted for an additional input ‘Start Month’ and ‘End Month’. Here you input the months range which you want to find the average bills value for. The start month entered must be before the end month. They should be number inputs between 1 – 12.



The final report input option is ‘f’. This provides the output of the average time between a bill. The output is a rounded answer in days.

A close up of a logo

Description automatically generated

After you view each report you will return to the main menu once again. If you wish to view the terms and conditions of the bill’s management company, you should enter ‘4’ in the main menu.

A screenshot of a cell phone

Description automatically generated