UNIVERSITY OF ENGINEERING & TECHNOLOGY PESHAWAR

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DEPARTMENT: ELECTRICAL

SUBJECT: INTRODUCTION TO AI

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ASSIGNMENT NO 3

Introduction

In this assignment, I worked with two CSV files: **load.csv** and **price.csv**.
The first file contains hourly power consumption in watts.
The second file contains the electricity price for each hour in Rs/kWh.

The task was to load both files, store the values in lists, write simple functions, and calculate:

1. **Hourly electricity bill**
2. **Total electricity bill**

Objectives

The assignment required the following steps:

1. Load both CSV files using the **csv** module.
2. Store hours, loads, and prices into separate lists.
3. Write two functions:
    - One to compute the bill for each hour.
    - One to compute the total bill.
4. Print all bills in a clean format.

Methodology

1. I imported the `csv` module.
2. I opened **load.csv** and stored:
    - Hour → `hrs`
    - Load (watts) → `load`
3. Then I opened **price.csv** and stored:
    - Price (Rs/kWh) → `price`
4. The calculation was done using two simple functions:
    - `hourly_bill(loads, prices)`
        - Converts watts to kWh
        - Multiplies kWh by price
    - `total(bills)`
        - Adds all hourly bills
5. Finally, the program prints hourly bills and the final total.

Python Code Used

```
import csv

hrs = []
load = []
price = []

with open("load.csv") as f:
    r = csv.reader(f)
    next(r)
    for row in r:
        hrs.append(int(row[0]))
```

```
        load.append(float(row[1]))

with open("price.csv") as f:
    r = csv.reader(f)
    next(r)
    for row in r:
        price.append(float(row[1]))

def hourly_bill(loads, prices):
    bills = []
    for i in range(len(loads)):
        kwh = loads[i] / 1000
        cost = kwh * prices[i]
        bills.append(cost)
    return bills

def total(bills):
    return sum(bills)

h_bill = hourly_bill(load, price)
t_bill = total(h_bill)

print("Hourly Bill Report")
for i in range(len(h_bill)):
    print("Hour", hrs[i], ":", h_bill[i], "Rs")

print("\nTotal Bill:", t_bill, "Rs")
```

Results

Using the sample data:

- Each hour has a fixed price of **40 Rs/kWh**
- Consumption ranges between **200W to 800W**

Hourly Bills (Rs):

Calculated as:

Bill = (Consumption in W / 1000) × Price

Hour	Load (W)	kWh	Bill (Rs)
1	200	0.2	8
2	300	0.3	12
3	500	0.5	20
4	700	0.7	28
5	600	0.6	24
6	400	0.4	16
7	800	0.8	32
8	700	0.7	28
9	600	0.6	24
10	500	0.5	20

Total Bill

Total Electricity Bill = 212 Rs

Conclusion

This assignment helped me practice:

- Reading multiple CSV files
- Storing data in lists
- Writing simple functions
- Using loops for hourly calculations
- Converting watts to kWh
- Computing a total bill

Assignment 3

By: Azka Karim

This program loads load and price CSVs and calculates hourly and total bills

In [1]:
```
import csv

hrs = []
load = []
price = []
```

In [2]:
```
with open("load.csv") as f:
    r = csv.reader(f)
    next(r)
    for row in r:
        hrs.append(int(row[0]))
        load.append(float(row[1]))
```

In [3]:
```
with open("price.csv") as f:
    r = csv.reader(f)
    next(r)
    for row in r:
        price.append(float(row[1]))
```

In [4]:
```
def hourly_bill(loads, prices):
    bills = []
    for i in range(len(loads)):
        kwh = loads[i] / 1000
        cost = kwh * prices[i]
        bills.append(cost)
    return bills
```

In [5]:
```
def total(bills):
    return sum(bills)
```

In [6]:
```
h_bill = hourly_bill(load, price)
t_bill = total(h_bill)
```

In [7]:
```
print("Hourly Bill Report ")
for i in range(len(h_bill)):
    print("Hour", hrs[i], ":", h_bill[i], "Rs")

print("\nTotal Bill:", t_bill, "Rs")
```

```
Hourly Bill Report
Hour 1 : 8.0 Rs
Hour 2 : 12.0 Rs
Hour 3 : 20.0 Rs
Hour 4 : 28.0 Rs
Hour 5 : 24.0 Rs
Hour 6 : 16.0 Rs
Hour 7 : 32.0 Rs
Hour 8 : 28.0 Rs
Hour 9 : 24.0 Rs
Hour 10 : 20.0 Rs

Total Bill: 212.0 Rs
```