

SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE		DEPARTMENT OF COMPUTER SCIENCE ENGINEERING		
<b>Program Name:</b> M. Tech/MCA		<b>Assignment Type:</b> Lab		
<b>Course Coordinator Name</b>		Venkataramana Veeramsetty		
<b>Course Code</b>	24CS002PC215	<b>Course Title</b>	AI Assisted Problem Solving Using Python	
<b>Year/Sem</b>	I/I	<b>Regulation</b>	R24	
<b>Date and Day of Assignment</b>	Week1 - Tuesday	<b>Time(s)</b>		
<b>Duration</b>	2 Hours	<b>Applicable to Batches</b>	M. Tech/MCA	
<b>AssignmentNumber:</b> 03.3(Present assignment number)/24(Total number of assignments)				

Q.No.	Question	Expected Time to complete
1	<p><b>Application for TGNPDCL</b></p> <p><b>Objective:</b> Build an application using Python program for TGNPDCL, to generate the bill based on energy consumption and type of customer with the help of AI tools.</p> <p>Build a python application as per below instructions</p> <ul style="list-style-type: none"> <li>• Read all the required data like PU,CU and Type of customer</li> <li>• Calculate bill amount based on number of units consumed, type of customer and other charges</li> <li>• Finally print the values of EC(Energy Charges),FC(Fixed Charges),CC(Customer Char-ges),ED(Electricity Duty Charges),bill as per expected output</li> </ul> <p><b>Requirements:</b></p> <ul style="list-style-type: none"> <li>• VS Code with Github Copilot and/or Google Colab with Gemini</li> <li>• Students should bring power bill from their home</li> </ul> <p><b>Deliverables:</b></p> <ul style="list-style-type: none"> <li>• Print energy bill for given inputs and verify with bill taken by students</li> </ul>	Week2 - Wednesday

**Deliverables:**

- Print energy bill for given inputs and verify with bill taken by students

The image shows a code editor with two tabs open, both titled "TASK 3.py".

**Top Tab (Line 1 to 30):**

```
def compute_charges(pu, cu, cust_type):
    # Energy charges
    ec = pu * cu

    # Rules for Fixed Charges (FC) and Customer Charges (CC)
    ct = cust_type.lower()
    if ct in ("d", "domestic", "residential"):
        # Domestic / Residential
        if cu <= 100:
            fc = 50.0
        elif cu <= 300:
            fc = 75.0
        else:
            fc = 100.0
        cc = 30.0
        ed_rate = 0.05 # 5% electricity duty on energy charges
    elif ct in ("c", "commercial", "industrial"):
        # Commercial / Industrial
        if cu <= 100:
            fc = 100.0
        elif cu <= 300:
            fc = 150.0
        else:
            fc = 200.0
        cc = 50.0
        ed_rate = 0.10 # 10% electricity duty on energy charges
    else:
        raise ValueError("Unknown customer type. Use Domestic/Commercial (D/C).")

    ed = ed_rate * ec
```

**Bottom Tab (Line 31 to 70):**

```
def compute_charges(pu, cu, cust_type):
    ed = ed_rate * ec
    total = ec + fc + cc + ed
    return ec, fc, cc, ed, total

def read_float(prompt):
    while True:
        try:
            return float(input(prompt).strip())
        except ValueError:
            print("Invalid number. Please try again.")

def read_cu(prompt):
    while True:
        try:
            v = input(prompt).strip()
            # allow integer or float units
            return float(v)
        except ValueError:
            print("Invalid units. Please enter numeric value.")

def main():
    print("Electricity Bill Calculator")
    pu = read_float("Enter Price per Unit (PU): ")
    cu = read_cu("Enter Units Consumed (CU): ")
    cust_type = input("Enter Customer Type (Domestic/Commercial) [D/C]: ").strip()

    try:
        ec, fc, cc, ed, total = compute_charges(pu, cu, cust_type)
    except ValueError as e:
        print(e)
        return

    # Print results (2 decimal places)
    print(f"EC(Energy Charges): {ec:.2f}")
    print(f"FC(Fixed Charges): {fc:.2f}")
    print(f"CC(Customer Charges): {cc:.2f}")
    print(f"ED(Electricity Duty Charges): {ed:.2f}")
    print(f"Bill Amount: {total:.2f}")

if __name__ == "__main__":
    main()
```

### Electricity Bill (Taken From Home)

Energy Charges:	2447.10
Fixed Charges:	50.00
Customer Charges:	140.00
Electricity Duty:	20.64
Interest on ED:	0.00
Surcharge:	0.00
ACD Surcharge:	0.00
FSA/FCA Charges:	0.00
Adjustment:	0.00
Interest on CD:	0.00
Loss/Gain:	0.26
<b>BILL Amount :</b>	<b>2658.00</b>
<b>Arrears:</b>	
Arrears as on 31-03-2025:	0.00
Arrears after 01-04-2025:	0.00
<b>Total Due:</b>	<b>2658.00</b>
<b>MATS Amount :</b>	<b>0.00</b>
<b>SUBSIDY/UNIT :</b>	<b>0.65</b>
<b>SUBSIDY AMOUNT :</b>	<b>223.59</b>

### Output

```
● mpCodeRunnerFile.python"
Electricity Bill Calculator
Enter Price per Unit (PU): 0.65
Enter Units Consumed (CU): 223.59
Enter Customer Type (Domestic/Commercial) [D/C]: D
EC(Energy Charges): 145.33
FC(Fixed Charges): 75.00
CC(Customer Charges): 30.00
ED(Electricity Duty Charges): 7.27
Bill Amount: 257.60
```