

`1. Electricity Bill Calculation`

`Problem Statement:`

A power distribution company wants to automate electricity bill generation based on the following rules:

1. `Fixed charge = ₹100` for all consumers.
2. `Rate per unit:`
 - `Up to 100 units` → ₹5 per unit
 - `101 to 300 units` → ₹7 per unit
 - `Above 300 units` → ₹10 per unit
3. `If the total bill exceeds ₹1000, add a 5% surcharge.`
4. The program should display
`customer details, total units consumed, bill amount, and surcharge (if any).`

`Requirements:`

1. `Input:`
 - Customer Name
 - Customer ID
 - Total Units Consumed
2. `Output:`
 - Base Bill
 - Surcharge (if applicable)
 - Total Bill

`Sample Test Case:`

`Input:`

```plaintext

Enter Customer Name: Amit Sharma

Enter Customer ID: 2025

Enter Total Units Consumed: 350

```

`Output:`

```plaintext

Customer Name: Amit Sharma

Customer ID: 2025

Units Consumed: 350

Base Bill: ₹3050

Surcharge: ₹152.5

Total Bill: ₹3202.5

```

```
#include <stdio.h>
```

```
int main() {
    char customer_name[50];
    int customer_id;
    int units_consumed;
    float base_bill, surcharge, total_bill;

    printf("Enter Customer Name: ");
    scanf(" %s", customer_name);

    printf("Enter Customer ID: ");
    scanf("%d", &customer_id);

    printf("Enter Total Units Consumed: ");
    scanf("%d", &units_consumed);

    base_bill = 100;

    if (units_consumed <= 100) {
        base_bill += units_consumed * 5;
    } else if (units_consumed <= 300) {
        base_bill += 100 * 5 + (units_consumed - 100) * 7;
    } else {
        base_bill += 100 * 5 + 200 * 7 + (units_consumed - 300) * 10;
    }

    surcharge = 0;
    if (base_bill > 1000) {
        surcharge = base_bill * 0.05;
    }

    total_bill = base_bill + surcharge;

    printf("\nCustomer Name: %s\n", customer_name);
    printf("Customer ID: %d\n", customer_id);
    printf("Units Consumed: %d\n", units_consumed);
    printf("Base Bill: ₹%.2f\n", base_bill);
    printf("Surcharge: ₹%.2f\n", surcharge);
}
```

```
printf("Total Bill: ₹%.2f\n", total_bill);

return 0;
}
```

Enter Customer Name: Ryan
Enter Customer ID: 11
Enter Total Units Consumed: 550

Customer Name: Ryan
Customer ID: 11
Units Consumed: 550
Base Bill: ₹4500.00
Surcharge: ₹225.00
Total Bill: ₹4725.00

2. Toll Tax Calculation for Vehicles`

`Problem Statement:`

A highway toll management system needs a program
to calculate toll tax
based on `vehicle type and distance traveled`:

1. `Vehicle Type & Base Charges:`

- Car → ₹5 per km
- Truck → ₹10 per km
- Bus → ₹8 per km

2. If a `truck` travels `more than 500 km`, a `10% discount` applies.

3. If a `bus` travels `more than 300 km`, a `5% discount` applies.

`Requirements:`

1. `Input:`

- Vehicle Type (Car/Truck/Bus)
- Distance Traveled (km)

2. `Output:`

- Total Toll Tax

`Sample Test Case:`

`Input:`

```plaintext

Enter Vehicle Type (Car/Truck/Bus): Truck

Enter Distance Traveled: 600

```

`Output:`

``plaintext

Vehicle Type: Truck

Distance Traveled: 600 km

Base Charge: ₹6000

Discount: ₹600

Total Toll Tax: ₹5400

...

```
#include <stdio.h>
int main()
{
    char vehicle_type[20];
    int distance_traveled;
    float base_charge, discount = 0;
    printf("Enter Vehicle Type (Car/Truck/Bus):\n ");
    scanf("%s", vehicle_type);
    printf("Enter Distance Traveled: ");
    scanf("%d", &distance_traveled);

    switch (vehicle_type[0]) {
        case 'c': case 'C':
            base_charge = distance_traveled * 5;
            break;
        case 't': case 'T':
            base_charge = distance_traveled * 10;
            if (distance_traveled > 500) discount = base_charge * 0.10;
            break;
        case 'b': case 'B':
            base_charge = distance_traveled * 8;
            if (distance_traveled > 300) discount = base_charge * 0.05;
            break;
        default:
            printf("Invalid vehicle type.\n");
            return 1;
    }

    printf("\nVehicle Type: %s\n", vehicle_type);
    printf("Distance Traveled: %d km\n", distance_traveled);
    printf("Base Charge: %.2f\n", base_charge);
    printf("Discount: %.2f\n", discount);
    printf("Total Toll Tax: %.2f\n", base_charge - discount);
}
```

```
return 0;  
}
```

Enter Vehicle Type (Car/Truck/Bus):

Car

Enter Distance Traveled: 450

Vehicle Type: Car

Distance Traveled: 450 km

Base Charge: 2250.00

Discount: 0.00

Total Toll Tax: 2250.00