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In [63]: ## Write a program to check whether a number is a palindrome or not

inp = input('Enter a number to check whether it is a palindrome or not ')
def is_pal(inp):
    return str(inp) == str(inp)[::-1];
print(is_pal(inp));
```

False

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In [67]: ## Calculate the sum of the geometric progression (n^2/2)
inp = int(input('Enter the value of n: '))
def geom_sum(n):
    return (n**2)/2;
print(geom_sum(inp));
```

24.5

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In [26]: ## Program to flip a coin 10 times and count the number of heads and tails
import random
def count_toss():
    heads = 0
    tails = 0
    for i in range(0,10):
        toss = random.randint(1,2);
        if toss == 1:
            heads += 1;
        else:
            tails += 1;
    return {'number_of_heads': heads, 'number_of_tails': tails};

print(count_toss());
```

{'number_of_heads': 6, 'number_of_tails': 4}

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In [181]: ## read a file and count the number of words in it
filename = "word_counter.txt";

file = open(filename, "r");
content = file.read();
file.close();

words = content.split();
word_count = len(words);
print("Number of words:", word_count)
```

Number of words: 9

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In [10]: ## Calculate the income tax of an employee

def calculate_income_tax(emp_id, basic, allowance):
    gross_pay = basic + allowance;
    income_tax = 0;
    if gross_pay < 5000:
        income_tax += 0;
    elif gross_pay > 5000 and gross_pay <= 10000:
        income_tax += (10/100)*gross_pay;
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elif gross_pay > 10000 and gross_pay <= 20000:
    income_tax += (20/100)*gross_pay;
else:
    income_tax += (30/100)*gross_pay;
net_salary = gross_pay - income_tax;
return {
    'emp_id': emp_id,
    'basic_salary': basic,
    'allowances': allowance,
    'gross_pay': gross_pay,
    'income_tax': income_tax,
    'net_salary': net_salary,
};
print(calculate_income_tax(1001, 15000, 6000));

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{'emp_id': 1001, 'basic_salary': 15000, 'allowances': 6000, 'gross_pay': 21000, 'income_tax': 6300.0, 'net_salary': 14700.0}
```

In [16]: *## Retail store management*

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def calculate_discount(customer_id, bill_amount):
    discount = 0;
    if bill_amount >= 1000:
        discount += (5/100)*bill_amount;
    elif bill_amount >= 500 and bill_amount < 1000:
        discount += (2/100)*bill_amount;
    elif bill_amount > 0 and bill_amount < 500:
        discount += (1/100)*bill_amount;
    after_discount_price = bill_amount - discount;
    final_price = after_discount_price;
    if customer_id >= 101 and customer_id <= 1000:
        final_price -= (2/100)*after_discount_price;
    return final_price;
print(calculate_discount(101, 1200));
print(calculate_discount(100, 1200));

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1117.2
1140.0
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In []: