11.Write a program to print the following pattern.

1

12

123

1234

12345

**PROGRAM:**

n = 5

for i in range(1, n + 1):

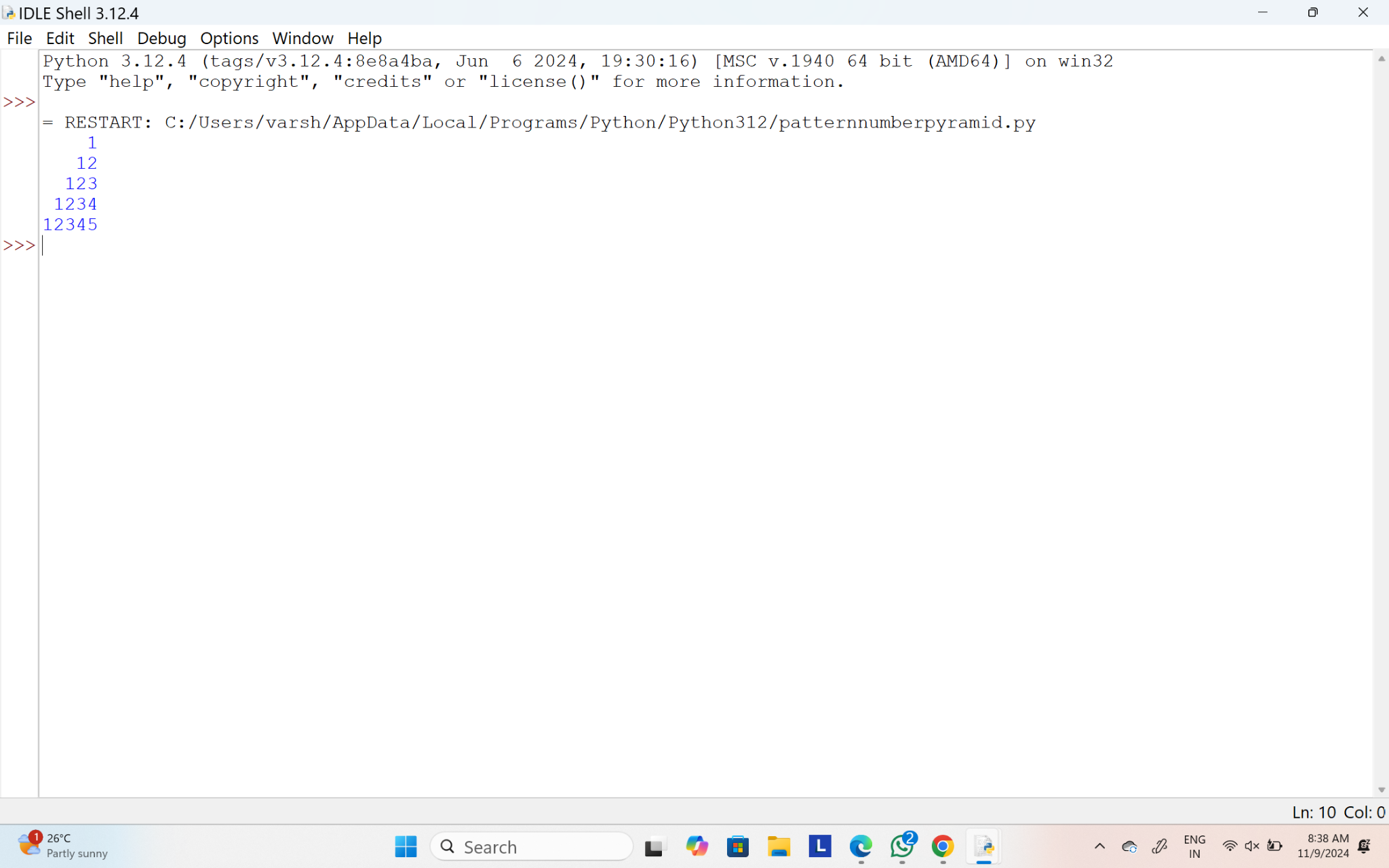
print(" " \* (n - i), end="")

for j in range(1, i + 1):

print(j, end="")

print()

**OUTPUT:**

****

12.Write a program to find the number of student users in the college, get the total users, staff users details from the client. Note for every 3 staff user there is one Non teaching staff user assigned by default.

Sample Input:

Total Users: 856

Staff Users: 126

Sample Output:

Student Users: 688

Test Cases:

1.Total User: 0

2.Total User: -143

3.Total User: 1026, Staff User: 1026

4.Total User: 450, Staff User: 540

5.Total User: 600, Staff User: 450

**PROGRAM:**

def calculate\_student\_users(total\_users, staff\_users):

non\_teaching\_staff = staff\_users // 3

student\_users = total\_users - (staff\_users + non\_teaching\_staff)

return student\_users

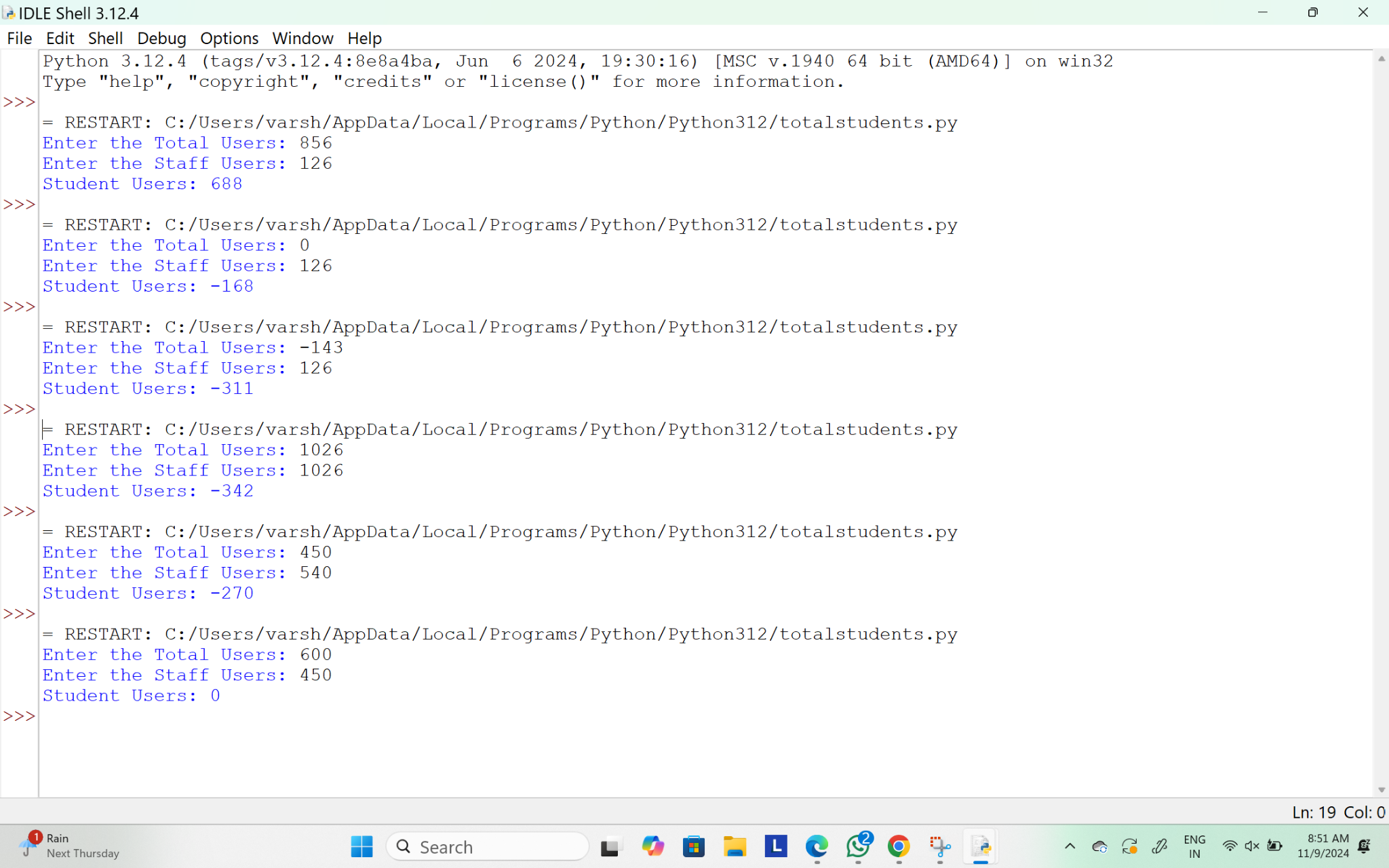
total\_users = int(input("Enter the Total Users: "))

staff\_users = int(input("Enter the Staff Users: "))

student\_users = calculate\_student\_users(total\_users, staff\_users)

print(f"Student Users: {student\_users}")

**OUTPUT:**



13.Write a program to convert Decimal number equivalent to Binary number and octal numbers?

Sample Input:

Decimal Number: 15

Sample Output:

Binary Number = 1111

Octal = 17

Test cases:

1. 111
2. 15.2
3. 0
4. B12
5. 1A.2

**PROGRAM:**

def convert\_decimal(decimal\_number):

binary\_number = bin(decimal\_number)[2:]

octal\_number = oct(decimal\_number)[2:]

return binary\_number, octal\_number

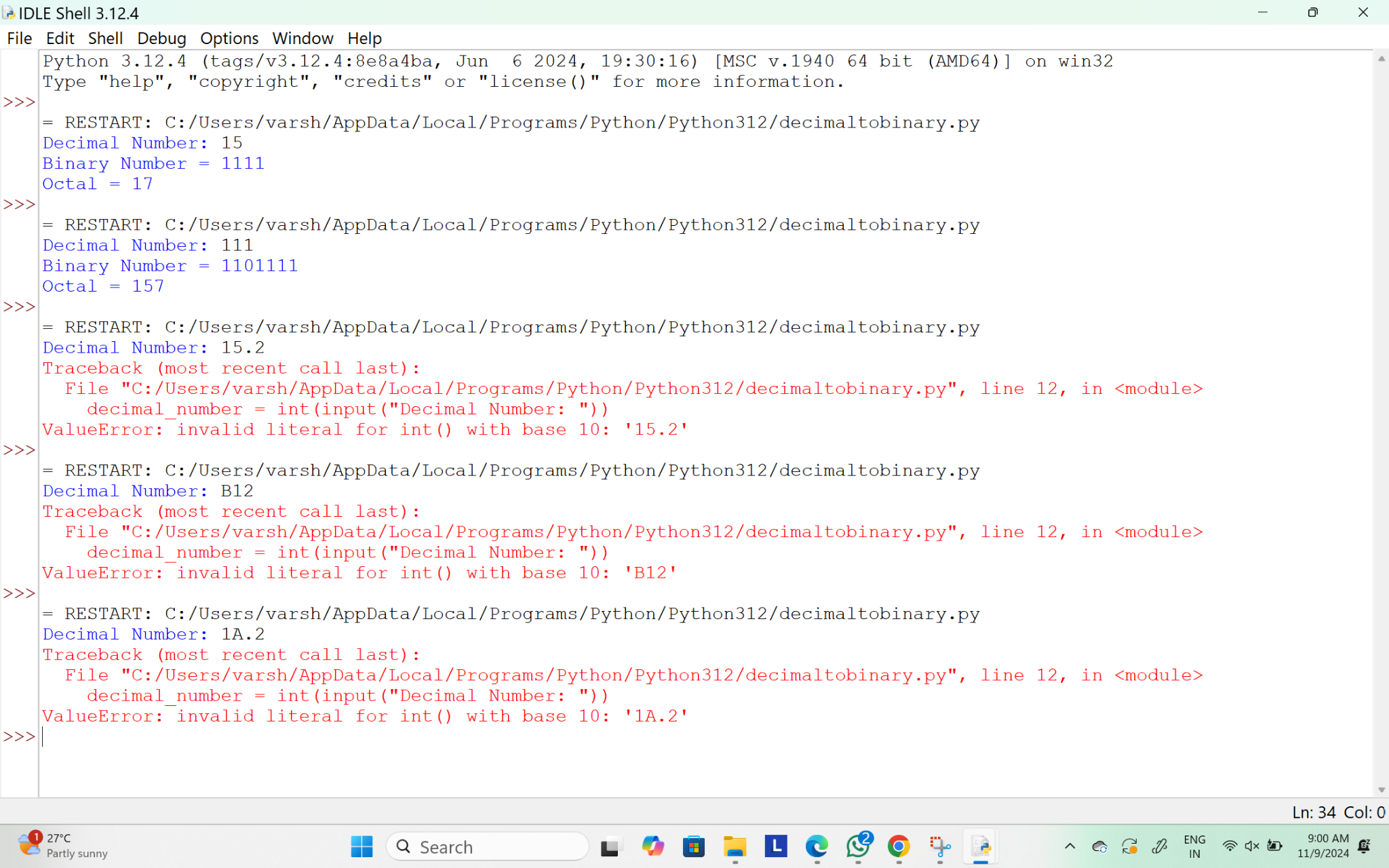
decimal\_number = int(input("Decimal Number: "))

binary\_number, octal\_number = convert\_decimal(decimal\_number)

print(f"Binary Number = {binary\_number}")

print(f"Octal = {octal\_number}")

**OUTPUT:**

****

14.Write a program to print the below pattern?

|  |  |  |  | 1 |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | 1 |  | 1 |  |  |  |
|  |  | 1 |  | 2 |  | 1 |  |  |
|  | 1 |  | 3 |  | 3 |  | 1 |  |
| 1 |  | 4 |  | 6 |  | 4 |  | 1 |

**PROGRAM:**

def print\_pascals\_triangle(n):

triangle = []

for i in range(n):

row = [1] \* (i + 1)

for j in range(1, i):

row[j] = triangle[i - 1][j - 1] + triangle[i - 1][j]

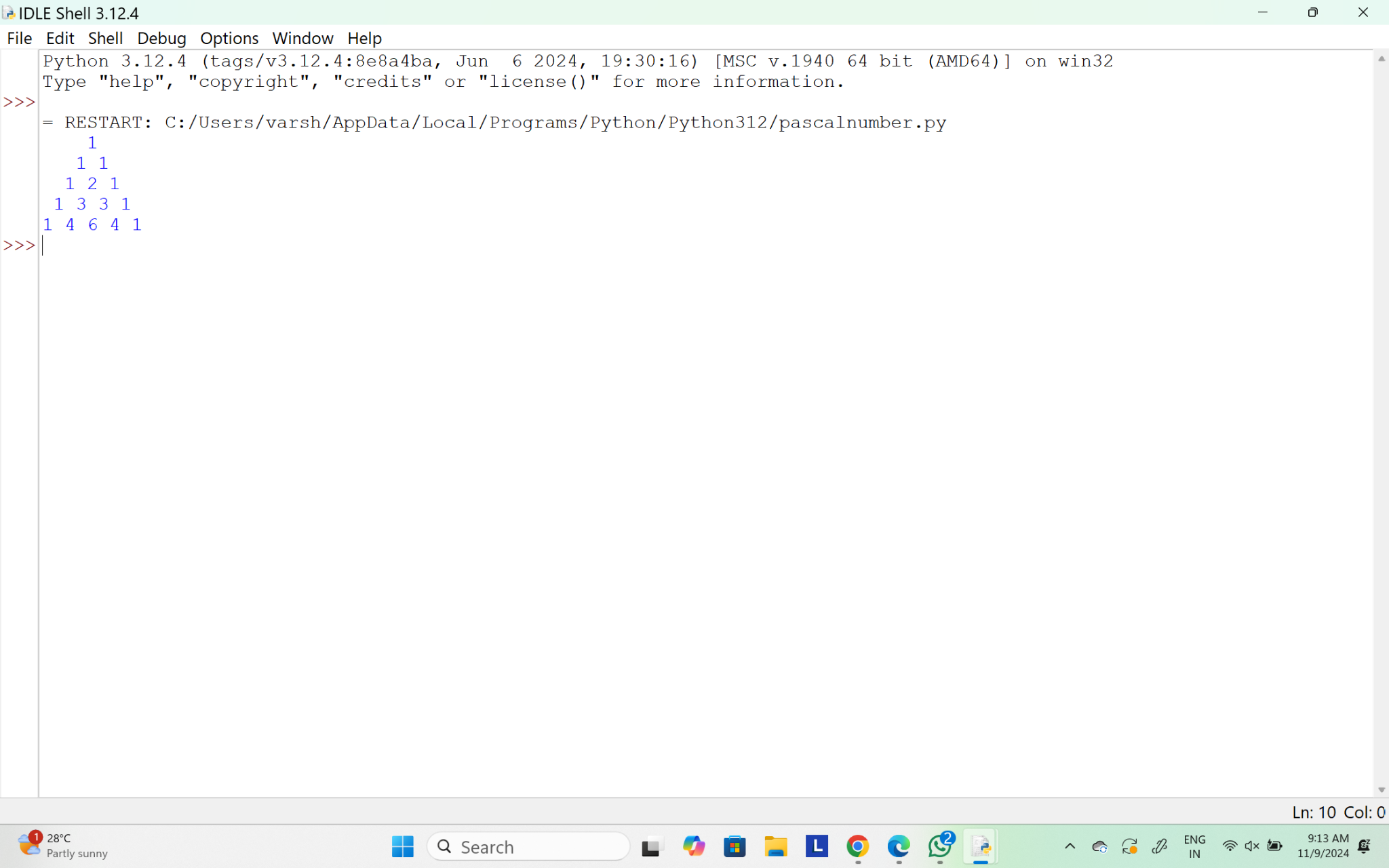
triangle.append(row)

for row in triangle:

print(" ".join(map(str, row)).center(n \* 2))

print\_pascals\_triangle(5)

**OUTPUT:**



15.In an organization they decide to give bonus to all the employees on New Year. A 5% bonus on salary is given to the grade A workers and 10% bonus on salary to the grade B workers. Write a program to enter the salary and grade of the employee. If the salary of the employee is less than $10,000 then the employee gets an extra 2% bonus on salary Calculate the bonus that has to be given to the employee and print the salary that the employee will get.

Sample Input & Output:

Enter the grade of the employee: B

Enter the employee salary: 50000

Salary=50000

Bonus=5000.0

Total to be paid:55000.0

**Test cases:**

1. Enter the grade of the employee: A

Enter the employee salary: 8000

1. Enter the grade of the employee: C

Enter the employee salary: 60000

1. Enter the grade of the employee: B

Enter the employee salary: 0

1. Enter the grade of the employee: 38000

Enter the employee salary: A

1. Enter the grade of the employee: B

Enter the employee salary: -8000

**PROGRAM:**

def calculate\_bonus():

grade = input("Enter the grade of the employee: ").strip()

salary = float(input("Enter the employee salary: "))

bonus = 0.0

if grade == 'A':

bonus = salary \* 0.05 # 5% bonus for grade A

elif grade == 'B':

bonus = salary \* 0.10 # 10% bonus for grade B

else:

print("Invalid grade entered.")

return

if salary < 10000:

bonus += salary \* 0.02

total\_salary = salary + bonus

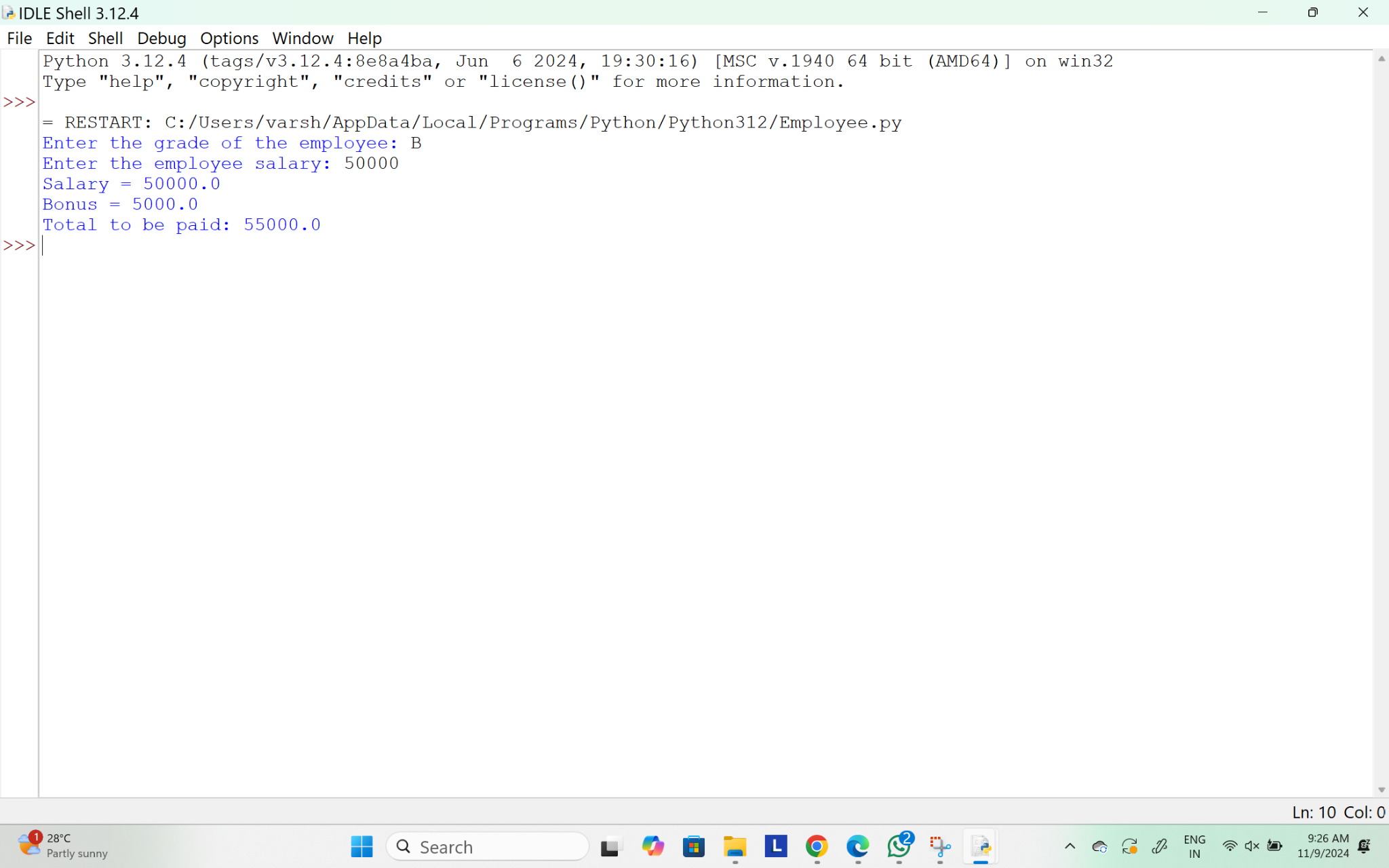
print(f"Salary = {salary}")

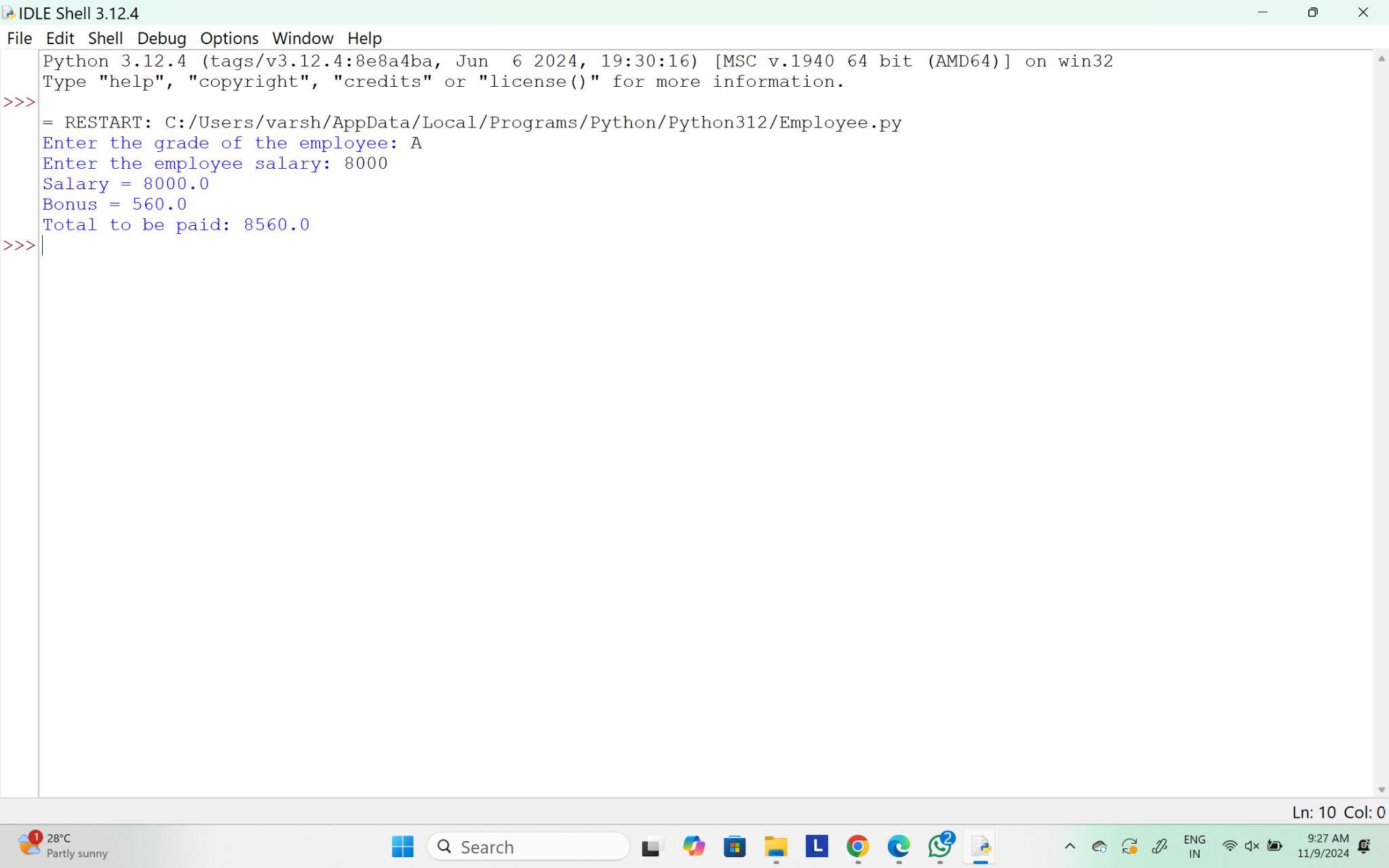
print(f"Bonus = {bonus}")

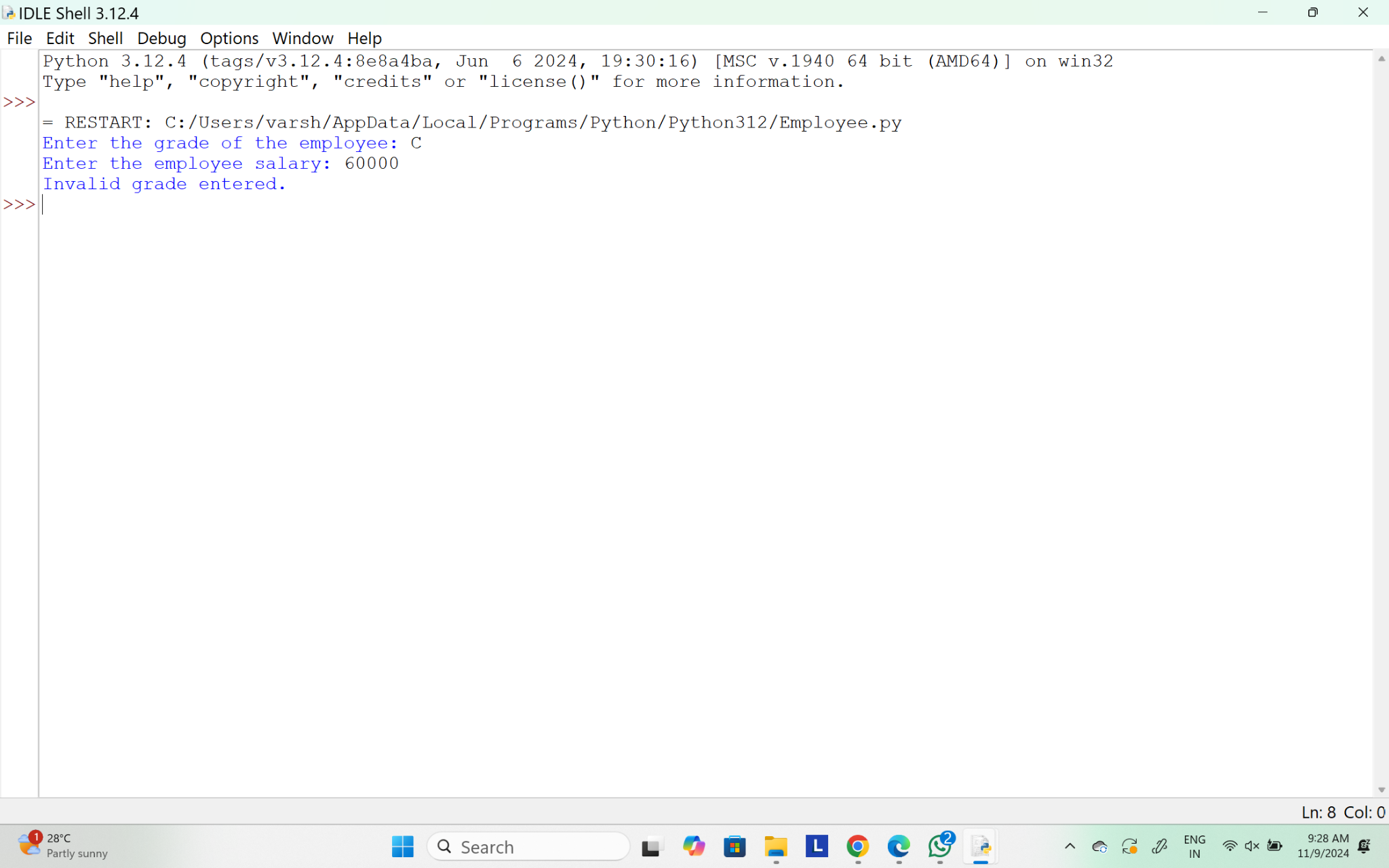
print(f"Total to be paid: {total\_salary}")

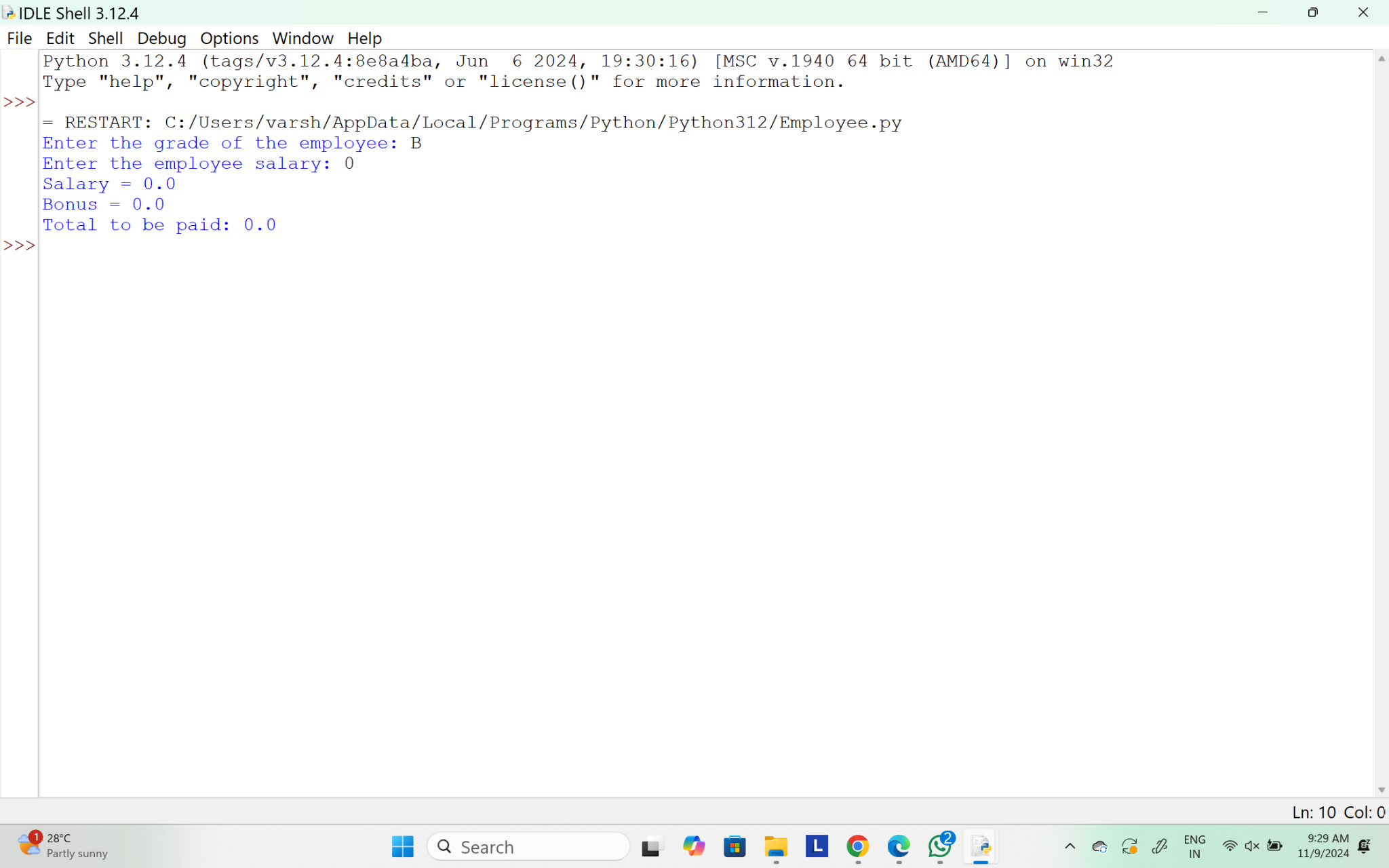
calculate\_bonus()

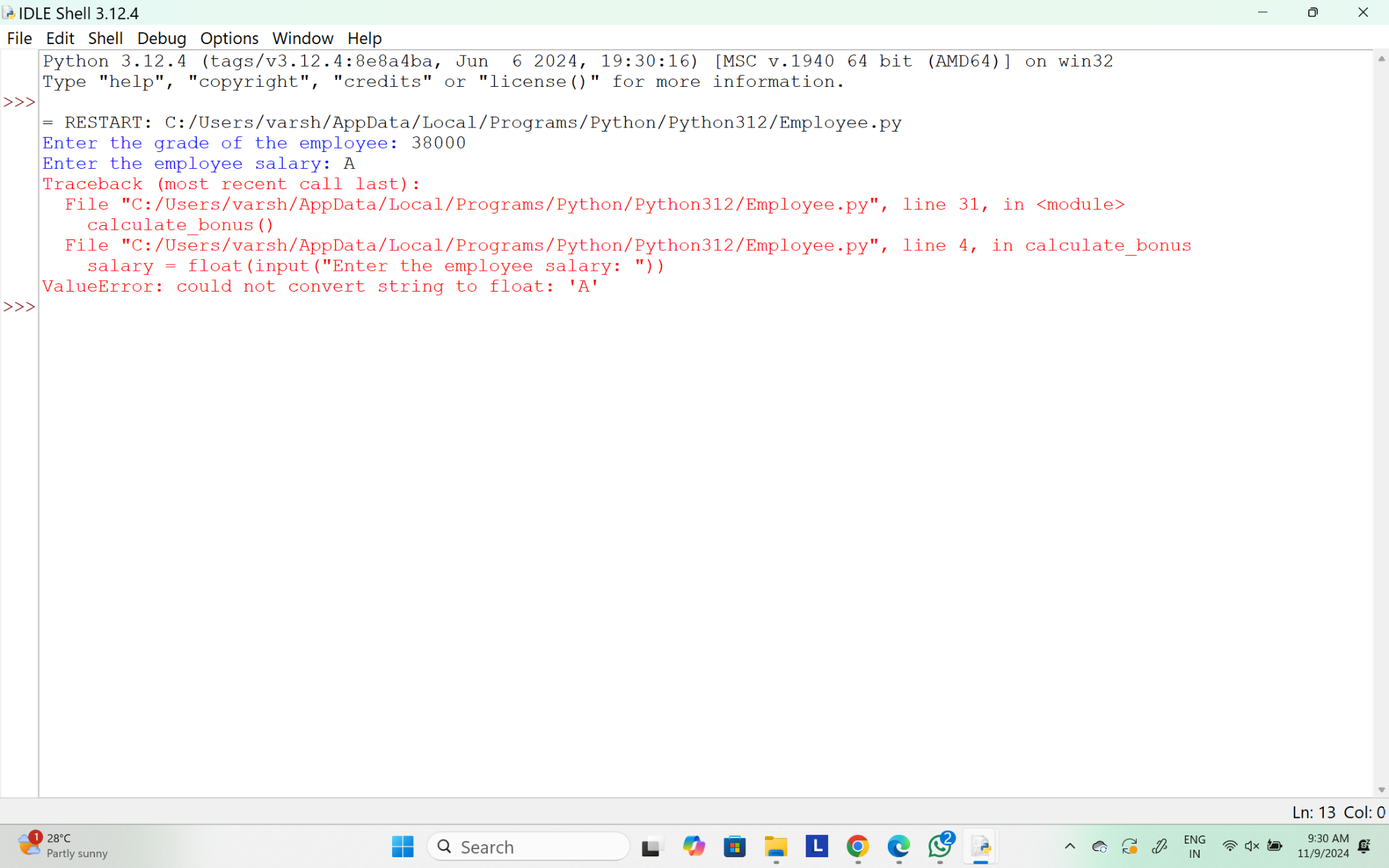
**OUTPUT:**

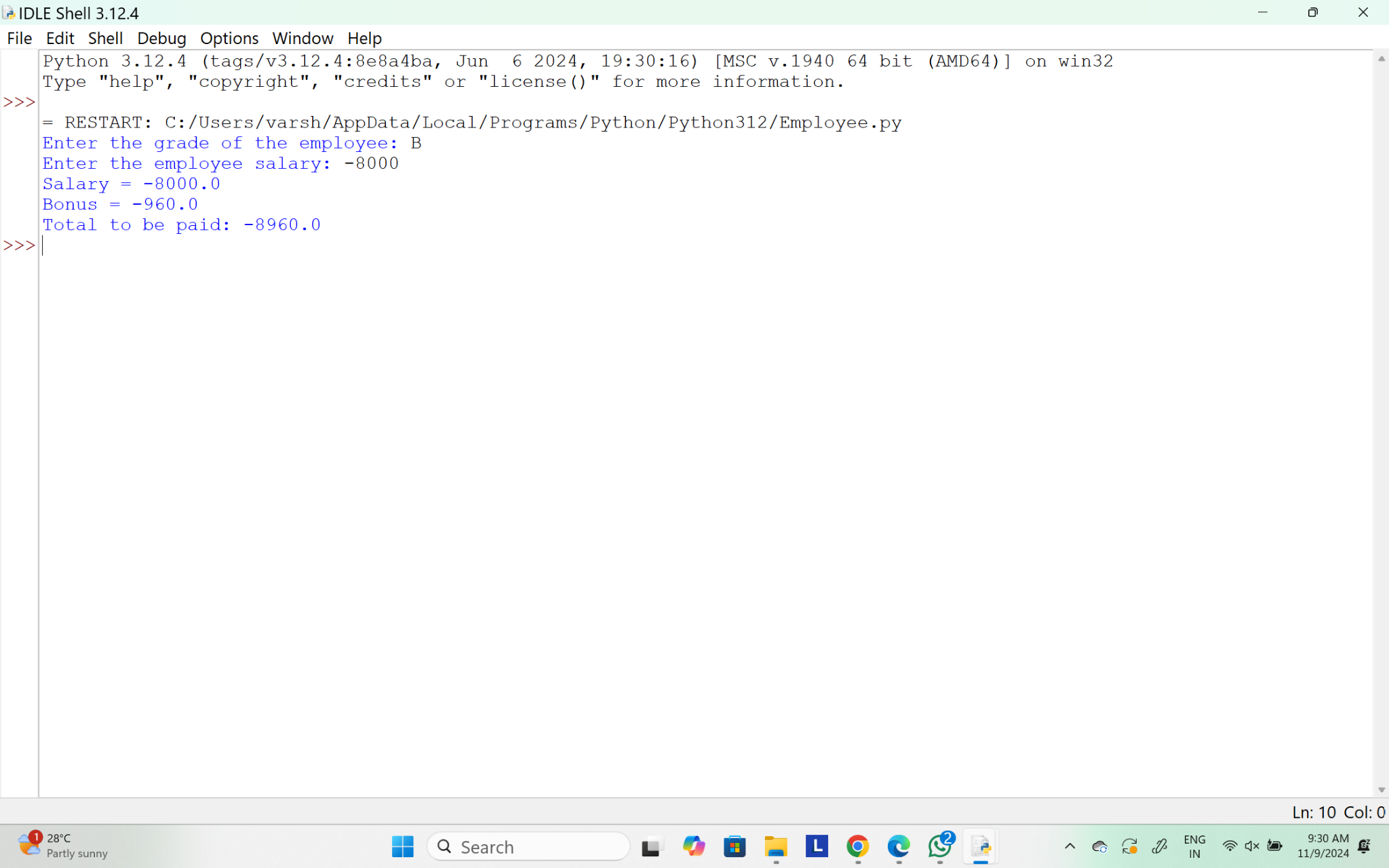
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