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Course Name: Design and Analysis of Algorithms Laboratory

Course Code: BCE5412

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Assignment 01: Square of big integer number.

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Input:

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def multiply(x, y): #Function to Multiply digits
    if x < 10 or y < 10: #Condition to check if it is single digit
        return x * y

    num = max(len(str(x)), len(str(y)))
    half_num = num // 2 #Divide the Number into two halves

    a = x // 10 ** half_num
    b = x % 10 ** half_num
    c = y // 10 ** half_num
    d = y % 10 ** half_num

    ac = multiply(a, c)
    bd = multiply(b, d)
    ad_plus_bc = multiply(a + b, c + d) - ac - bd

    return ac * 10 ** (2 * half_num) + ad_plus_bc * 10 ** half_num + bd

def square(x):
    return multiply(x, x)

large_integer = int(input("Enter a 20 Digit Number : "))
result = square(large_integer)
print("Square of Given Number is : ", result)
```

Output:

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Enter a 20 Digit Number : 12345678901234567890
Square of Given Number is : 152415787532388367501905199875019052100
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