84. Karatsuba algorithm for multiplication

Code:

```
def karatsuba(x, y):
    if x < 10 or y < 10:
        return x * y
    n = max(len(str(x)), len(str(y)))
    m = n // 2
    high1, low1 = divmod(x, 10**m)
    high2, low2 = divmod(y, 10**m)
    z0 = karatsuba(low1, low2)
    z2 = karatsuba(high1, high2)
    z1 = karatsuba((high1 + low1), (high2 + low2)) - z2 - z0
    return (z2 * 10**(2*m)) + (z1 * 10**m) + z0
x = 123456789
y = 987654321

result = karatsuba(x, y)
print(f"The product of {x} and {y} is {result}")
```

Output:

```
The product of 123456789 and 987654321 is 121932631112635269
```

Time Complexity:

- T(n)= O(n^1.585)