3. Write C program that demonstrates the usage of these notations by analyzing the time complexity of some example algorithms.

PROGRAM:

import time def sum\_using\_loop(n): sum = 0 for i in range(1, n+1):

sum += i return sum

def sum\_using\_formula(n):

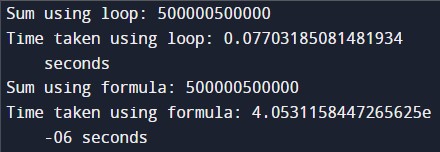
return (n \* (n + 1)) // 2

def main():

n = 1000000 start\_loop = time.time() sum1 = sum\_using\_loop(n) end\_loop = time.time() time\_taken\_loop = end\_loop - start\_loop print("Sum using loop:", sum1) print("Time taken using loop:", time\_taken\_loop, "seconds") start\_formula = time.time() sum2 = sum\_using\_formula(n) end\_formula = time.time() time\_taken\_formula = end\_formula - start\_formula print("Sum using formula:", sum2) print("Time taken using formula:", time\_taken\_formula, "seconds")

if \_\_name\_\_ == "\_\_main\_\_":

main()

OUTPUT: 

TIME COMPLEXITY: O(n)