AP Computer Science Lab

$$S(n)=\sum_{i=1}^{N} i = 1+2+3+\cdots+(N-1)+N = \sum_{i=1}^{N-1} i + N = S(n-1)+N$$

$$S(1)=1$$

$$P(n)=\prod_{i=1}^{N} i = 1\bullet 2\bullet 3\bullet \cdots \bullet (N-1)\bullet N = \prod_{i=1}^{N-1} i\bullet N = P(n-1)\bullet N$$

$$P(1)=1$$

For example

$$sum\_prod(6,\ \text{"*"}) = 720$$

$$sum\_prod(8,\ \text{"+"}) = 36$$

Write ONE (**not two separate individuals**) recursive program which meet the following requirements:

1) Prompt the user to input the N, the up cap of the natural number;
2) Prompt the user to input the operation symbol, either "+" for doing the sum or "*" for doing the product (factorial)
3) Output the result
   a) for sum, the output should be "The sum of the first N natural numbers is xxxxxx."
   b) for product, the output should be "The product of the first N natural numbers is xxxxxx."