1. Write some lines of code that will calculate the sum 1+2+3+...+300.  The idea is to create a variable that will store the current value of the sum.  Set it to zero, then use a for loop that will run through the numbers 1, 2, 3, ... and add each of these to the current sum.  After the for loop, output the value of the sum.
2. Modify your program to sum the first N numbers, and set N equal to 1000, 10000, and 100000 to see what sum you get.
3. Write a program to calculate the sum 12 + 22 +32 + ... 4002.
4. Write a program to calculate the sum 1·2+2·3+3·4+ ... + 249·250.
5. Write a program to calculate 10! ("10 factorial"), which is defined to be 10\*9\*8\*7\*6\*5\*4\*3\*2\*1.
6. Write a program to calculate N! ("N factorial"), where N is a non-negative integer.  Note that 0! is defined to be 1.
7. Write a program to calculate 11 + 22 + 33 + ... + 1010.
8. Write a program to calculate 1 + 1/1! + 1/2! + 1/3! + ... + 1/10! Display the sum after each term is added.
9. Write a program that takes 10 numbers. print the numbers in ascending order using any sorting technique.
10. Write a program to input N numbers and print
    1. sum of all even numbers,
    2. sum of all odd numbers,
    3. sum of all prime numbers.

**String manipulation**

1. Write a program that prompts the user for a string, and prints its reverse.
2. Write a program that prompts the user for a sentence, and prints each word on its own line.
3. Write a program that prompts the user for a sentence, and capitalize first letter of each word. (ex- hello world becomes Hello World).

**Loops**

1. Write a function that outputs a sideways triangle of height 2n-1 and width n, so the output for n = 4 would be:

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1. Write a program to print Pascal’s Triangle.

**Functions**

1. Write a function to check if an integer is negative; the declaration should look like
   1. *bool is\_positive(int i);*
2. Write a function that takes a list of strings and prints them, one per line, in a rectangular frame. For example the list ["Hello", "World", "in", "a", "frame"] gets printed as:

\*\*\*\*\*\*\*\*\*\*

\* Hello \*

\* World \*

\* in \*

\* a \*

\* frame \*

\*\*\*\*\*\*\*\*\*\*

1. Write a function that tests whether a string is a palindrome.
2. Write a program to implement Pass by value , Pass by reference.