Note: Weightage:20

All statements should be commented. You have to submit a .cpp file for each question. **Plagiarism cases will get straight zero**. All submissions should be made through slate. The task has a heavy weightage so take it seriously.

Question 1:

Write a program that reads a string and outputs the number of times each lowercase a vowel appears in it. Your program must contain a function with one of its parameters as a string variable, and return the number of times each lowercase vowel appears in it. Also write a program to test your function. (Note that if str is a variable of type string, then str.at(i) returns the character at the ith position. The position of the first character is 0. Also, str.length() returns the length of the str, that is, the number of characters in str.)

Question 2:

Write a program that prints the day number of the year, given the date in the form month-day-year. For example, if the input is 1-1-2006, the day number is 1; if the input is 12-25-2006, the day number is 359. The program should also check for a leap year. A year is a leap year if it is divisible by 4, but not divisible by 100. For example, 1992 and 2008 are divisible by 4, but not by 100. A year that is divisible by 100 is a leap year if it is also divisible by 400. For example, 1600 and 2000 are divisible by 400. However, 1800 is not a leap year because 1800 is not divisible by 400.

Question 3:

Write a function that takes as a parameter an integer (as a long value) and prints the number of odd, even, and zero digits in the long integer.

Question 4:

(Perfect Numbers): An integer is said to be a perfect number if the sum of its factors, including 1 (but not the number itself), is equal to the number. For example, 6 is a perfect number, because 6 = 1 + 2 + 3. Write a C++ program that prompts the user to enter a number (between 1 and 1000) and determines whether input number is a perfect number. It should also print the factors of the input perfect number to confirm that the number is indeed perfect.

Question 5:

Write four separate programs that use for (nested 10x10) loop statements to print all of the following patterns (a to d). All asterisks (*) should be printed by a single statement of the form cout << '*'; (this causes the asterisks to print side by side). [Hint: The last two patterns require that each line begin with an appropriate number of blanks (or spaces).]

Question 6:

Write a program which get char data as input and then tell whether the given character is a vowel or consonant.

Question 7:

Prompt the user to enter three values and print these values in forward and reverse order as shown below:
Enter three numbers: 9 3 4

Your number forward:
934

Your number reversed:
439

Question 8:

Write the definition of a function that takes as input three decimal numbers (e.g. a, b, c) and returns the first number multiplied by the second number to the power of third number i.e. returns (a*b)c.

Question 9:

Write a program which take a number as input from the user and tells whether the number is prime no or not.

Question 10:

Write a program which print all possible value of a and b for equation a + b = 1000
Example:
1 + 999 = 1000
2 + 998 = 1000
...
999 + 1 = 1000