THE CODERS CUP

FRESHMEN ROUND

QUESTION SET -B

Competition Rules:

Participation Guidelines:

- The Freshmen Coders Cup round spans for 1 hour. If you have completed the problem set before the allocated time, you may leave the competition room quietly, but inform the coordinator must.
- If you leave the room, you cannot return.
- You can discuss only with your team mates. If you discuss with anyone else, both team will be disqualified from the competition.

Submission Guidelines:

- Find sample inputs from net-storage.
- The problem submission will be through PC^2
- Clarifications to any problem can be obtained using PC^2. No in room managers will be responsible for problems/confusions in problem set given.
- You are allowed to use language
    - C, C++, C#.NET, JAVA.
- IDEs allowed are:
    - Bloodshed Dev C++ for C and C++
    - Visual Studio 2008 or 2010 for C#.NET
    - NetBeans 6.8 for JAVA.
- Make console projects for all afore mentioned IDEs.
- Show output on console; don't write on a text file.
- Do not prompt for input from console in the program.
- Remove system ("pause")/getch()/package inclusion statements from your choice before submitting.

Additional Guidelines:

- The solution will be judged by multiple input files and execution time.
- The decision of judge will stand unchallenged.
- Books, manuals, and any sort of guide materials are not allowed.
- Your team can be dis-qualified, if found hard coding for solutions.
- Your team can be dis-qualified, if found using internet.
- Your team can be dis-qualified, if found unfair in anyway.

Note: Save your work continuously, ACM NUCES is not responsible for any loss of work due to power failure or any other reason.

Question 1:

BINARY-TRIANGULAR FISHES

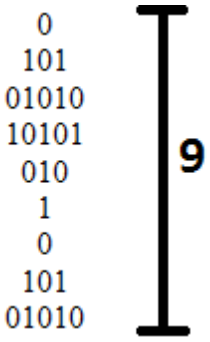
You're an amateur research scientist in the Base-Polygonal World.

The Base-Polygonal World (BPW) can be found in a galaxy millions of light years away. BPW is very much like our world. Similar to our world, it has various different terrains and landscapes. It also has a large variety of animals.

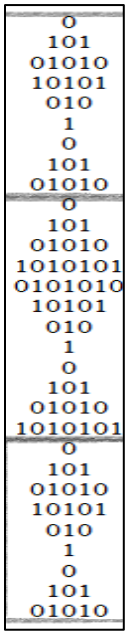
A unique property of these animals of BPW is that they are made up of numbers and polygons. The scientists of BPW have thus devised a clever naming scheme for the various species that exist over there. Each species is named in the format Base-PolygonType CreatureType.

Some of the interesting species found on BPW are the Hexadecimal-Hexagonal Cats, the Decimal-Ocatagonal Dragons, and the Binary-Triangular Fishes. The lead scientist at BPW has assigned you the task of simulating the behavior of Binary-Triangular Fishes.

Binary-Triangular Fishes are made up of only 0s and 1s, and are formed from two straight triangles and an inverted triangle. A characteristic property of Binary-Triangular Fishes is their size. The following image shows a Binary-Triangular Fish of size 9.



Like other fishes, Binary-Triangular Fishes prefer to travel in schools. However, they always travel in a straight line, one behind another. For example, a school of three Binary-Triangular Fishes of sizes 9, 12 and 9, are illustrated as:



OUTPUT:

Your task is to generate a school of 5 Binary-Triangular Fishes of sizes 15, 9, 12, 9, 15.

The fishes must be left-justified. To help you visualize the solution, the previous example's output can be viewed by running BTF.exe

The output will be generated on the console by your program.

Question 2:

PLAY WITH THE DIGITS

Digits are the basic building block of any number. Play the digit is a game played by decomposing a number into digits and performing certain functions on it. These digits can be added, subtracted, multiplied and divided. The functions to be applied will be hieratical (does not matter for addition and multiplication). In case of subtraction or division the most significant digit will be subtracted or divided by the second most significant digit and their answer will then be subtracted or divided by the next most significant digit and so on.

For example: Divide for 821 will be 4 (8 divided by 2 then the result 4 divided by 1). In case of digit zero in division and multiplication we will ignore it. For example: Multiply for 302 will be 6 (3 multiply by 2 are 6 and 0 is ignored).

INPUT:

First line of input contains an integer “n” which is the number of test cases. You will find “n” test cases on subsequent lines.

First character of each line is the operation (+,-,*, /) followed by integers.

OUTPUT:

For each test case you have to print the resultant after applying the given operation.

Sample:

Input	Output
3	16
+367	0
-954	3
/903	

Question 3:

SENTENCE SEARCH

Sentence Search is new search system which one of your friends wants to implement in his software and he wants you to develop it for him. This search system finds the sentences from a file on the basis minimum and maximum length of the sentence. Basically it finds all the sentences, or consecutive sequence of sentences, in a text file where: min <= length of sentence <= max.

Assume that a sentence ends in a period, question mark, or exclamation point.

Count all blanks and punctuation, but ignore all the blanks in the start and the end of sentence and assume only one blank between sentences.

INPUT:

First line of input contains an integer 't' which is the number of test cases. Followed by 't' test cases. Each test case have 2 lines, first line contains 2 integers line, min and max, separated by a space. Second line represents the file.

Precondition: Min and Max will be positive integers less than 1000, and Min <= Max.

OUTPUT:

For each test case you have to print the number of sentences found i.e. 's'. Followed by 's' lines, each containing the 's' found sentences. Print out "No Sentence Found" if there are none. Each test case output is separated by an empty line.

Sample

Input	Output
4	1
16 16	Black is white.
Black is white. Day is night. Understanding is ignorance.	2
15 18	Truth is fiction.
Truth is fiction. Safety is danger.	Safety is danger.
30 37	1
Truth is fiction. Safety is danger.	Truth is fiction. Safety is danger.
1 5	No Sentence Found
Black is white.	