TK1114 Computer Programming

Lab 6

Repetition, Conditional Structure &

Problem Solving

1 – 3 November 2016

Name : _____

Matric Number : _____

6A	TRIANGLE WAVE 2	
	Input	Standard input
	Output	Standard output
	Topic	Repetition Structure : nested loop

Problem Description
In this problem you are to generate a triangular wave form according to a specified pair of Amplitude and Frequency.

Input
The input begins with a single positive integer `N` ($1 \leq N \leq 100$) on a line by itself indicating the number of the cases following. For each of the following `N` lines there are 2 integers `amp` ($1 \leq amp \leq 9$) and `freq` ($1 \leq freq \leq 10$) that represent Amplitude and Frequency.

Output
For each test case, the output must follow the description below. The outputs of two consecutive cases will be separated by a blank line. For the output of your program, you will be printing wave forms. The total number of wave forms equals the Frequency, and the horizontal "height" of each wave equals the Amplitude. The waveform itself should be filled with integers on each line which indicate the "height" of that line.
NOTE: There is a blank line after each test cases including the last case.

Sample Input Output

Sample Input	Sample Output
2 3 2 2 1	1 22 333 22 1 1 22 333 22 1 1 22 1

6B	ALTERNATING SUM	
	Input	Standard input
	Output	Standard output
	Topic	Repetition structure : problem solving

Problem Description

An alternating sum is a sequence of arithmetic operations in which each addition is followed by a subtraction, and vice versa, applied to a sequence of numerical entities.

For example, given a positive integer `num` = 10, the alternating sum for the sequence is as follows:

```
altSum = 1 – 2 + 3 – 4 + 5 – 6 + 7 – 8 + 9 – 10 = -5
```

Input

The first line contains an integer `n` ($1 \leq n \leq 100$) which determines the number of test cases. The following `n` lines contain a positive integers `num` ($1 \leq num \leq 1000$) which represent the number of integers in the sequence.

Output

For each test case, the output contains a line in the format Case #x: `altSum`, where x is the case number (starting from 1) and `altSum` is value of alternating sum for the sequence.

Sample Input Output

Sample Input	Sample Output
2 10 111	Case #1: -5 Case #2: 56

6C	EQUILATERAL PATTERN	
	Input	Standard input
	Output	Standard output
	Topic	Repetition structure : nested loop

Problem Description
Draw an equilateral triangle pattern as shown in the sample output.

Input
The first line contains an integer `n` ($1 \leq n \leq 100$) which determines the number of test cases. The following `n` lines contain a positive integers `size` ($1 \leq size \leq 40$) which represent the size of the triangle pattern.

Output
For each test case, print the triangle pattern as shown in the sample output

Sample Input Output

Sample Input	Sample Output

2
5
3
	`    *`
	`   ***`
	`  *****`
	` *******`
	`*********`
	`  *`
	` ***`
	`*****`

6D	10 RICE SACK	
	Input	Standard input
	Output	Standard output
	Topic	Simple problem solving

Problem Description
Several sacks of rice need to be transported to 10 Orphanage Houses. The heaviest sack will go to Orphanage House Al-Ameen because it has the most number of orphanges. The lightest will be sent to Orphanage House Mutiara due to the small number of children staying there.

Given a row of rice sacks, decide which sack goes to Al-Ameen?

Input
The first line is an integer that represent the number of cases n ($1 \leq n \leq 100$). The following n lines have 10 integers indicating the weights of 10 rice sacks, each separated by a blank. No sack will have a weight of more than 100 unit.

Output
For each test case, the output contains a line in the format Case #x: followed by an integer, where x is the case number (starting from 1) and an integer that indicates the weight of a rice sack that will go to Al-Ameen**.**

Sample Input Output

Sample Input	Sample Output
3 9 15 25 1 6 10 5 20 3 18 5 10 25 3 1 30 15 5 1 78 7 4 20 50 5 10 35 64 11 5	Case #1: 25 Case #2: 78 Case #3: 64