1)  Write a program called **HarmonicSum** to compute the sum of a harmonic series, as shown below, where *n*=50000. The program shall compute the sum from *left-to-right* as well as from the *right-to-left*. Obtain the difference between these two sums and explain the difference. Which sum is more accurate?

ExerciseBasics_HarmonicSum.png

2) Write a program called **ComputePI** to compute the value of π, using the following series expansion. You have to decide on the termination criterion used in the computation (such as the number of terms used or the magnitude of an additional term). Is this series suitable for computing π?

ExerciseBasics_ComputePI.png

Write a program to compute the cosine of x. The user should supply x and a positive integer n. We compute the cosine of x using the series and the computation should use all terms in the series up through the term involving xn

cos x = 1 - x2/2! + x4/4! - x6/6! .....

3) Given an integer n, print the following shapes using asterisks and spaces. For

example, for n = 6 the following shapes are printed

Shape 1

**Input:**

6

**Output:**

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

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

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

**\* \* \***

**\* \***

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4) Given an integer n, print the following shapes using asterisks and spaces. Forexample, for n = 5 the following shapes are printed Shape 2

**Input:**

5

**Output:**

**\***

**\* \***

**\* \* \***

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

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

**5)** Write a program called TimeTable to produce the multiplication table of 1 to 9 as shown using two nested for-loops:

\* | 1 2 3 4 5 6 7 8 9

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1 | 1 2 3 4 5 6 7 8 9

2 | 2 4 6 8 10 12 14 16 18

3 | 3 6 9 12 15 18 21 24 27

4 | 4 8 12 16 20 24 28 32 36

5 | 5 10 15 20 25 30 35 40 45

6 | 6 12 18 24 30 36 42 48 54

7 | 7 14 21 28 35 42 49 56 63

8 | 8 16 24 32 40 48 56 64 72

9 | 9 18 27 36 45 54 63 72 8113

6) Akash and Aayush play the following number game. First they choose a number N (1<=N<=1000000000). Then both of them take their turn one by one. In a turn player has to subtract 1 from the number if it is odd or divide the number by 2 if it is even. Game end when the number becomes zero. Aayush has a dominating nature So he always play first. Help them in finding out who will win the game.

**Input**

First line contains T, the number of test cases. Following T lines contain 1 integer each, the value of N.

**Output**

For each test case print "Aayush" if Aayush wins else print "Akash".

**Example**

**Input:**

2

468

7547

**Output:**

Aayush

Akash