**Set B**

Problem 1: Maximum number

You are given an array of integers. Find the maximum value among them.

First line of the input is n which the number of integers to follow is. The following line consists of n integers.

|  |  |
| --- | --- |
| Sample Input | Output for sample input |
| 5  1 2 3 4 5  3  10 20 30 | 5  30 |

Problem 2: Minimum number

You are given an array of integers. Find the minimum value among them.

First line of the input is n which the number of integers to follow is. The following line consists of n integers.

|  |  |
| --- | --- |
| Sample Input | Output for sample input |
| 5  1 2 3 4 5  3  10 20 30 | 1  10 |

Problem 3: Array Query

You are given an array of integers. Find the maximum difference between any two value of indices.

First line of the input is N which denotes the number of integers to follow. Second line has those integers.

|  |  |
| --- | --- |
| Sample Input | Output form sample input |
| 5  1 2 3 4 5  4  7 8 9 10 | 4  3 |

Problem 4: Binary Conversion

You are given a decimal number N(N is always non negative). Write a program that takes N and prints it in its ( N’s) binary form.

|  |  |
| --- | --- |
| Sample Input | Output for sample input |
| 345  0  287 | 101011001  0  10011111 |

Problem 5: Decimal Conversion

You are given a binary number N(N is always non negative). Print it in decimal.

|  |  |
| --- | --- |
| Sample input | Output for sample input |
| 101011001  0  10011111 | 345  0  287 |

Problem 6: Factorials.

You are to write a program that prints factorial of given input N(N≤12).

|  |  |
| --- | --- |
| Sample input | Output for sample input |
| 5 | 120 |

Problem 7: Fibonacci numbers.

Write a program that takes N and prints Nth Fibonacci number. (N <40)

Note:  
Fibonacci(n) = Fibonacci(n-1) + Fibonacci(n-2) *for* n≥2

Fibonacci(0) = 0, Fibonacci(1) = 1;

|  |  |
| --- | --- |
| Sample input | Output for sample input |
| 5  10 | 5  55 |

Problem 8: Consecutive sum

You are given two integers a and b (1<=a,b<=10000). Write a program that prints the sum of integers lying in between them.

|  |  |
| --- | --- |
| Sample input | Output for sample input |
| 10 20  40 30 | 165  385 |

Problem 9: Solution to quadratic equation

Consider the following equation.

Ax2 + Bx + C = 0.

Find the solutions of x.

First line of the input contains three real numbers A, B, C respectively. Output a line which contains solutions to x. You are guaranteed that you will never have imaginary solutions.

|  |  |
| --- | --- |
| Sample input | Output for sample input |
| 5 6 1 | -0.200000 -1 |

Problem 10: Primes

A prime number is an integer which has exactly two divisors. :)

First few prime numbers are: 2, 3, 5, 7, 11, 13…..

You are to write a program that prints 1500th prime number. There is no input for this program. Output a line with the desired solution.

Problem 11: Floor function and Ceiling function

You are given a real number. Print its floor and ceil value respectively.

(You are not allowed to use library floor or ceil function)

|  |  |
| --- | --- |
| Sample input | Sample output for input |
| 1.5  2 | 1 2  2 2 |

Problem 12: Round function

You are given a real number N. Round it to nearest integer.

(You are not allowed to use built in round function)

|  |  |
| --- | --- |
| Sample input | Sample output for input |
| 1.5  2.1 | 2  2 |

Problem 13: String Count

You are given a string consisting of only alpha-numerals. You are to count the percentage of vowels, consonants and digits in the string. Please note that English has five vowels.

Input consists of a single line with the string. See the sample output for the exact output format.

|  |  |
| --- | --- |
| Sample input | Output for sample input |
| Abcd2 | Vowels = 20.00 %  Consonants = 60.00%  Digits = 20.00% |

Problem 14: String reverse

You are given a string. You must write a program that reverses the string. You may assume that the length of string won’t exceed 1000. You should only consider the English letters.

First line of the input consists of the string itself.

|  |  |
| --- | --- |
| Sample input | Output for sample input |
| You are a div 1 programmer. | remmargorp1vidaerauoY |

Problem 15: Grid Rotation

You are given a 2D character grid. Write a program that rotates the grid once in clockwise direction.

First line of the input contains R<=50, C<=50 which denote row and column of the grid respectively.

See the sample output for the exact format.

|  |  |
| --- | --- |
| Sample input | Sample output for input |
| 3 3  abc  def  ghi | gda  heb  ifc |