

CS2002301 2021 Fall

Homework #0

Due date: 2021/10/06 08:00 (UTC+8)

1. This assignment weight 0 points.
 2. Submit the code to Online judge system (<https://nlp.csie.ntust.edu.tw:2021>) and submit the report and source code to Moodle system. In the report, briefly explain how you solve the problem and list resources you referenced. Please followed the Homework rules and Online judge guide.
 3. If you have any question or confusion, feel free to ask on Moodle forum.
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Problem 1 - Euclidean algorithm(0 pt.)

test case scores: 25+25+25+25

The Euclidean algorithm, or Euclid's algorithm, is an efficient method for computing the greatest common divisor (GCD) of two integers (numbers), the largest number that divides them both without a remainder. Both the content and the proof of this algorithm can be easily found on wikipedia (https://en.wikipedia.org/wiki/Euclidean_algorithm). This problem is raised especially for those who are not yet familiar with C/C++ language, in which we assume all the homework should be written, to try out the simplest commands. Good luck and have fun.

In each test case, there are several lines of input, a, b where $1 < a, b < 2^{31} - 1$ and $a, b \in \mathbb{Z}$, please show the greatest common divisor of a, b

Problem 2 - 瓦基 and his bread(0 pt.)

test case scores: 25+25+25+25

After the COVID outbreak in May, Taiwan officially went into Level 3 epidemic alert. 鲁拉拉 decided to store some food, thus he asked 瓦基 to make some bread for him.

1. 鲁拉拉 told 瓦基 that each bread should not be made of less than N grams of flour.
2. 鲁拉拉 will prepare up to M grams of flour for 瓦基.
3. 瓦基 can decide the amount of flour per bread a and the total amount of flour b to make the bread.

In return for 瓦基's effort, he can keep the remained flour after he make as many bread as possible. Please find the best combination of a, b (where $N \leq a \leq b \leq M$ and $a, b, N, M \in \mathbb{Z}$), so 瓦基 can keep most flour c .

In each test case, there are several lines of input, N, M , where $1 \leq N \leq M \leq 2^{31} - 1$, please show the maximum amount of flour c that 瓦基 can keep for himself.

Problem 3 - Sum to N (0 pt.)

test case scores: 5+10+15+30+40

Given a number N , please calculate $s = \sum_{i=1}^N i$.

In each test case, there are several lines of input N , where $1 \leq N \leq 2^{63} - 1$ and $N \in \mathbb{Z}$, please calculate and show ($s \bmod 997$)