

15-110 Refresher Session : Week 3

No Calculators, only Brains !!

1. **General Discussion** We have <5 minutes to discuss anything you want to from the course.

2. Act like a computerFollow the algorithm for $n = 1729$

1. Input : n , $sum = 0$
2. $n > 0$?
 - (a) If yes :
 - i. $digit = \text{last digit of } n$
 - ii. $sum = sum + digit^2$
 - iii. n is updated to n without the last digit
 - (b) If no : Move to step 3
3. Write the final sum on the board, or if you see another answer, validate it.

3. Incomplete outline : Act like a programmer

It is 11 am and Sam is hungry. He wants to cook meal X, but the recipe he has is unclear. He has all the ingredients in his pantry except small spoons. Our task is to help Sam. The recipe of meal X has n items. Let us assume that the ingredients are numerical and named from x_0, x_1, \dots to x_{n-1} and their quantities are named from y_0, y_1, \dots to y_{n-1} . For example, you have to add y_1 spoons of x_1 . Complete the following algorithm to help Sam cook meal X. Since he does not have small spoons in his pantry, he skips every ingredient which has a quantity less than that of the smallest spoon

1. Input : __, smallestSpoon, x_0, x_1, \dots to x_{n-1} , _____, $pot = 0$, currentIngredient
2. For each __ with values 0 to __, repeat the following steps
 - (a) __ < smallestSpoon ?
 - i. If Yes : _____
 - ii. If __ :
 - A. currentIngredient = _____
 - B. pot = _____
3. The Meal X is in the _____

4. Act like a computer

- (a)
 1. Input $n = 10$, counter = 0
 2. For i in the range of values 1 to half of n (exclusive), repeat the following:
 - (a) n is divisible by i ?
 - i. If yes : counter = counter + 1
 - ii. If no : Do nothing
 3. counter > 1 ? :
 - (a) If yes : Answer = No
 - (b) If no : Answer = Yes
 4. Write the Answer on the board, or if you see another answer, validate it.
- (b) What do you think the above algorithm is trying to find ?

5. Incomplete outline : Act like a programmer Sam was so hungry that he started to eat from the pot. Complete the algorithm below and help him eat.

1. Input : pot (is full) , spoon = 10
2. pot _____ ? :
 - (a) If __ : _____
 - (b) If no :
 - i. _____
 - ii. _____
3. You are done!