1. WRITE A C PROGRAM TO ADD **TWO FRACTION**S AND DISPLAY THE RESULT FRACTION. YOUR PROGRAM WILL PROMPT THE USER TO INPUT FRACTION 1 AND FRACTION 2. THE NUMERATOR AND DENOMINATOR OF EACH FRACTION ARE INPUT SEPARATELY BY SPACE. SEE THE EXAMPLE OUTPUT BELOW:

   ENTER FRACTION 1(NUMERATOR DENOMINATOR): 1 2
   ENTER FRACTION 2(NUMERATOR DENOMINATOR): 2 5
   RESULT: 9/10

---

2. W (a) CONSIDER AN ARRAY X OF LENGTH N RANDOMLY INITIALIZED. WRITE A PROGRAM THAT RETURNS THE POSITION AND VALUE OF THE MINIMUM

   (b) CONVERT DECIMAL NUMBER TO HEXADECIMAL NUMBER

---

3. W (a) WAP with functions to find the GCD of 2 numbers using (a) iterative method (b) recursion.

   (b) PRIME FACTORS OF AN INTEGER NUMBER.

---

4. Add N fractions (where input is given as a fraction represented as a structure). The fractions can be both positive and negative.

Input:	Output:
a> number of fractions b> The fractions with their signs	An integer, if the fraction can be reduced to an integer else keep it as a fraction.

e.g.	Fraction Input :
Number of Fractions: 4	1/2 -1/2 ¼ 3/4
Output: 1	
Number of Fractions: 2	Fraction Input:
	½ -3/4
Output: - ¼	

5. W (a) Find the HCF of two integer numbers using (i) recursion (ii) iteration number

(b) CONSIDER AN ARRAY X OF LENGTH N RANDOMLY INITIALIZED. WRITE A PROGRAM THAT RETURNS THE POSITION AND VALUE OF THE MINIMUM NUMBER

---

6. (a) CONVERT DECIMAL NUMBER TO HEXADECIMAL NUMBER

   (b) There is a straight line with numbered positions from 0 to N. A walker starts at one of these positions and steps forward or backward one position at a time. The constraint is that he can only take 2N steps either in both sides. The probability of a forward step is P and of a backward step, therefore, is 1 – P (Take P as an input from user). A walk ends when position 0 or N is reached. Simulate such N walks to determine how often each of these end positions is reached. This is a random walk problem. For all walks, which do not reach the goal, find the mean deviation from the 0 or N positions, whichever is nearer for each walk.

---

7. (a) Write a program for sorting a set of integer data with subsequent passes from opposite ends by bubble sort; your program should take advantage of the fact that data may get sorted faster at the ends than the one-at-a-time as is normal in bubble sort. The method is called shaker sort with flag.

(b) PRIME FACTORS OF A NUMBER.

---

8. W (a) Write an interactive program that will read in a +ve integer value and determine the following

   i) If the integer is a prime number   ii) If the integer is a Fibonacci number

   (b) WAP to check whether any input +ve integer is palindrome or not. (You cannot use any string function)

---

10. Write the code for a binary multiplier: two input numbers will be given, they have to be converted to a binary string, multiplied and shown in decimal again.

If you are using arrays for storing the binary number, the array has to be generated dynamically, based on the integer value taken.

---

14. Add two very large numbers, where size of the numbers >> sizeof(long int).

9. A burglar has broke into a antique shop to steal, he has a bag which can carry a load of say 10 kgs at maximum, his goal is to steal the artefact that will fetch maximum value, so he notes the price of each artefact and measures its weight and puts it inside if it is worth it. Code a program to help the thief achieve his goal!

input:

Enter capacity of bag: 10

Enter number of artefact s: 6

Enter artefact 1 weight and price: 5, 800

Enter artefact 2 weight and price: 4, 200

Enter artefact 3 weight and price: 6, 250

Enter artefact 4 weight and price: 1.5, 500

Enter artefact 5 weight and price: 1, 100

Enter artefact 6 weight and price: 2.5, 250

output:

Take artefact 4,1,5,6

---

11. Write a program to implement the following

1. Prompt the user for a phrase or sentence (terminated with the ENTER key) from the console (not a command line parameter).

2. Tokenize the input phrase/sentence into individual words. Use the strtok function. See the linux man pages for details. The words in the phrase or sentence are separated by spaces.

3. Convert each word to Pig Latin and copy the converted word to an output string. To convert the word to Pig Latin, move the first letter to the end of the word and add the letters ``ay'' to the end. For example, ``This is my string manipulation program'' will become ``hisTay siay ymay tringsay anipulationmay rogrampay''.

4. When finished processing the input, print the output string to the screen.

---

13. You are given n Euclidean Points (You can generate them). Draw a boundary around them with the given points, such that the boundary includes all the other given points.

Note : Printing the boundary points is enough.

E.g 8 points given as (0.5, 0.25), (0,0), (0.3,0.5), (1,0), (0.5, 0.5), (0,1), (0.25, 0.5), (1,1)

Output will be : (0,0), (1,0), (0,1), (1,1)

12. Bidhan studies at the University of Dhaka. Recently he noticed that, some of the university students are speaking a strange language. The words used in that language are not meaningful to him. After some investigation he learned that, the students use the largest lexicographical permutation of words instead of the original words.

Given a string, output it's largest lexicographical permutation. Also output all the permutations of the

Input:

The only line of the input contains next p.

Output:

Output a single line containing the largest lexicographical permutation of p.

Constraints:

- $1 \le |p| \le 4 \times 106$. ($|p|$ denotes the size of p.)
- p will contain lowercase English letters only.

---

15. (a) Write a program to reverse the digits of a number. Do not use strings or char arrays in any place of the program

(b) WRITE A FUNCTION THAT OUTPUTS A RIGHT-SIDE-UP TRIANGLE OF HEIGHT N AND WIDTH 2N-1; THE OUTPUT FOR N = 6 WOULD BE:

```
         *
        ***
       *****
      *******
     *********
    ***********
```

---

16. (a) Write a program to, reverse a given array of integers. You cannot use a second array
(b) Declare two arrays A and B, find A n B (intersection) and A u B (union).

ALL MOBILE PHONES AND PEN DRIVES TO BE KEPT OUT.