

Homework 2

1. Calculating frequency of letters. You will be given a sequence of letters in lowercase and a nonletter character at the end of input('.' , ';' , '?' , '*' , etc..). Read until nonletter character, calculate the frequency of letters and print. (Number of letters is unknown)

Input:

A b g B b a G b a h *

Output:

Letters->Frequency

a->3

b->4

g->2

h->1

2. Write the definitions of these functions inside the code:

```
#include<stdio.h>
#include<stdlib.h>

void allocate_storage(int **);
void read_numbers(int **);
void print_and_process(int **);
void free_storage(int **);

int main()
{
    int **m = NULL;

    allocate_storage(&m); // allocates storage for m

    read_numbers(m);      /*You will be given 10 rows of
                           numbers, first number in each row is the
                           number of the numbers which will be
                           given*/

    print_and_process(m); //calculate sum of each row and print

    free_storage(m);      //free the storage

    return 0;
}
```

Sample Input:

2 1 0

3 0 1 1

1 1

0

0

6 1 0 2 3 7 8

1 6

0

5 1 0 0 1 2

3 6 5 0

Sample Output:

Value for row 0: 1

Value for row 1: 2

Value for row 2: 1

Value for row 3: 0

Value for row 4: 0

Value for row 5: 21

Value for row 6: 6

Value for row 7: 0

Value for row 8: 4

Value for row 9: 11

3. Write a C program to add two complex numbers using structures. Make a separate program to add and multiply complex number and display the sum and product ,which is asked for, in main function.

For example this program will calculate $(4 + 3i) + (7 + 6i)$ or $(4 + 3i) * (7 + 6i)$

Input1:

4 3

+

7 6

Output1:

Sum = (11) + (9)i

Input2:

3 4

*

7 6

Output2:

Product = (-3) + (46)i

4. Write a C program to create a structure TIME containing hour, minutes and seconds. Ask the user to input start time and stop time in 24 hour format. And find the difference of start time and stop time entered by user. To calculate time difference, make a function Difference() and this function should return difference of two time period by reference.

Enter hours, minutes and second of start time:

Enter hours, minutes and second of stop time:

Input:

12 15 01

13 27 00

Output:

TIME DIFFERENCE: 13:27:0 – 12:15:1 = 1:11:59