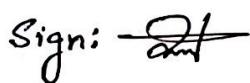


Assignment 5 and 6

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Sign: - 

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Lab Group - B1

Year: I

Semester: I

Course - CSE 1102

Dept: CSE

Problem-1 (1D Array sorting)

Unacademy

```
#include <stdio.h>

void sort (int a[], int size)
{
    /* This program uses bubble sort method */
    for (int i=0; i<size-1; i++)
    {
        for (int j=0; j<size-i-1; j++)
        {
            if (a[j] > a [j+1])
            {
                int temp = a[j];
                a[j] = a[j+1];
                a[j+1] = temp;
            }
        }
    }

    for (int i=0; i<size; i++)
        printf ("%d ", a[i]);
}
```

```
int main()
```

(function point A) Lecture

```
{
```

```
int a[100], size; (size has to be fixed)
```

```
printf ("Enter the size of an array: \n");
```

```
scanf ("%d", &size); (size needs to be fixed)
```

```
printf ("Enter an array: \n");
```

```
for (int i=0 ; i<size; i++)
```

```
scanf ("%d", &a[i]);
```

```
sort (a, size);
```

```
return 0; (a is sorted)
```

```
}
```

i = 0 - first

i = 1 - second

i = 2 - third

i = 3 - fourth

(+ it goes i (0 to len) and

(len is "len") thing

if (a[i] < a[i+1])

if (a[i] > a[i+1])

if (a[i] == a[i+1])

if (a[i] != a[i+1])

if (a[i] < a[i+1])

if (a[i] > a[i+1])

if (a[i] == a[i+1])

if (a[i] != a[i+1])

Problem-2 (sum of two matrices)

```
#include <stdio.h>
int main()
{
    int row, col;
    printf("Enter number of rows and columns: \n");
    scanf("%d %d", &row, &col);
    int a[row][col], b[row][col];
    printf("Enter the matrix A: \n");
    for (int i=0; i<row; i++)
        for (int j=0; j<col; j++)
            scanf("%d", &a[i][j]);
    printf("Enter the matrix B: \n");
    for (int i=0; i<row; i++)
        for (int j=0; j<col; j++)
            scanf("%d", &b[i][j]);
    printf("Sum of matrices: \n");
    for (int i=0; i<row; i++)
        for (int j=0; j<col; j++)
    {
        b[i][j] = a[i][j] + b[i][j];
    }
}
```

for (int i=0; i<row; i++)

{

 for (int j=0; j<col; j++)

{

 printf ("%d ", b[i][j]);

(N/ ymmeds haq waqt ko ander me rakhni) Haining

 printf ("\n");

}

 return 0;

}

(hti [row] i [0:i] n)

(hti [row] i [0:i-1] n)

(HTI EID "bs") mazd

(ht/ :A visiton ast rakhni) Haining

(ht/ :A visiton ast rakhni) Haining

(++i < row) i [0:i-1] n)

(HTI EID "bs") mazd

(ht/ :visiton ko rakhni) Haining

(ht/ :visiton ko rakhni) Haining

(ht/ :visiton ko rakhni) Haining

(HTI EID "bs") mazd

8.

Problem - 3 (Identity matrix or not)

```
#include <stdio.h>
int main()
{
    int row, col, count = 0, countZero = 0;
    printf("Enter the size of the matrix: \n");
    scanf("%d %d", &row, &col);
    int a[row][col];
    printf("Enter the matrix: \n");
    for (int i=0; i<row; i++)
    {
        for (int j=0; j<col; j++)
        {
            scanf("%d", &a[i][j]);
        }
    }
    for (int i=0; i<row; i++)
    {
        for (int j=0; j<col; j++)
        {
            if (i==j && a[i][j]==1)
                count++;
        }
    }
}
```

```

        (last no visited &  $a[i][j] = 0$ ) - marked
else if ( $i \neq j$  &&  $a[i][j] = 0$ )
{
    countZero++;
}

y
y (transitive & 0 = know less for
if ("if : x is true, set to false instead") Then
if (count == row && countZero == (row * col - count))
    printf ("Identity Matrix\n");
else
    printf ("No\n");
return 0;
}

```

} (if i < row & i >= l then) not

} (if i < l then "less" know

} (if i < row & i >= l then) not

} (if i < l then "less" know

} (if i < l then "less" know

} (if i < l then "less" know

Problem-4 (Display name and age)

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

int main()
{
    char name[100]; int age;
    gets(name);
    scanf("%d", &age);
    printf("My name is %s, I am %d years old.", name, age);

    return 0;
}
```

Output:
Enter your name: *Harsh*
Enter your age: *18*
My name is Harsh, I am 18 years old.

Problem 5 (Number of letters, vowel, consonant)

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

(Ch. 01 to Ch. 05) about it.

```
# include <string.h>
```

(Ch. 06 to Ch. 10) about it.

```
int main()
```

(Ch. 11 to Ch. 15)

```
{
```

```
    int letters = 0, vowel = 0, cons = 0;
```

```
    char s[255];
```

```
    gets(s);
```

```
    int len = strlen(s);
```

```
    for (int i = 0; i < len; i++)
```

```
{
```

```
        if ((s[i] >= 'A' & s[i] <= 'Z') || (s[i] >= 'a' & s[i] <= 'z'))
```

```
{
```

```
    letters++;
```

```
    if (s[i] == 'a' || s[i] == 'e' || s[i] == 'i' || s[i] == 'o' || s[i] == 'u')
```

```
vowel++;
```

```
else if (s[i] == 'A' || s[i] == 'E' || s[i] == 'I' || s[i] == 'O' || s[i] == 'U')
```

```
vowel++;
```

```
else
```

```
cons++;
```

y
y

(b) `printf("Number of letters : %.d\n Number of vowel : %.d\n Number of consonant : %.d", letters, vowel, cons);`

Number of consonant : %.d", letters, vowel, cons);

return 0;

}

Problem-6 (Total words in a string)

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

```
#include <string.h>
```

```
void main()
```

{

```
char s[100];
```

```
gets(s);
```

```
int count=1;
```

```
for (int i=0; s[i]!='\0'; i++)
```

{

```
if (s[i-1] == ' ')
```

```
count++;
```

}

```
printf ("Total words : %.d", count);
```

}

problem-7) (Capitalize 1st letter of a word)

idea: user will type a word & program will print it

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

```
#include <string.h>
```

```
#include <ctype.h>
```

```
void main()
```

```
{
```

```
char s[100];
```

```
gets(s);
```

```
strlwr(s);
```

```
for (int i=0; s[i] != '\0'; i++)
```

```
{
```

```
if (i==0 || s[i-1] == ' ')
```

```
s[i] = toupper(s[i]);
```

```
}
```

```
puts(s);
```

```
}
```

```
(func. "bx": below (slot)) using
```

Problem-8 (Basic declaration of pointers)

```
#include <stdio.h>

void main()
{
    int a, *x, **y;
    a = 5;
    x = &a;
    y = &x;
    printf ("%d %d %d", a, *x, **y);
}
```

Problem-9 (Use of & (address of) and * (value at address) operators)

```
#include <stdio.h>

void main()
{
    int a;
    a = 5;
    printf ("%d %d", &a, *(&a));
}
```

Problem - 10 (Adding two numbers using pointers)

```
#include <stdio.h>

void summ( int a, int b, int *sum )
{
    *sum = a+b;
}

void main()
{
    int a, b, sum;
    printf ("Enter 2 numbers: \n");
    scanf ("%d %d", &a, &b);
    summ(a, b, &sum);
    printf ("Sum = %.d\n", sum);
}
```

Problem - 11 (Printing elements of an array using pointers)

```
#include <stdio.h>           /* Related solution */

void display(int *a, int n);    /* Function to print array */

void main()
{
    int n;
    scanf("%d", &n);

    int a[n];
    printf("Enter an array of size %d: \n", n);

    for (int i=0; i<n; i++)
        scanf("%d", &a[i]);      /* Input insertion */

    display(a, n);
}

void display(int *a, int n)
{
    for (int i=0; i<n; i++)   /* Iteration */
        printf("%d\t", *(a+i)); /* Prints each element */

    /* Output format: %d\t for each element
     * (a+i) = address of i-th element
     * *(a+i) = value at i-th element
     */
}
```

Problem-12 (Find largest element using pointers)

```
#include <stdio.h>
int findmax (int *ptr, int n)
{
    int max = *ptr;
    for (int i=1; i<n; i++)
    {
        if (*ptr+i) > max)
            max = *ptr+i;
    }
    return max;
}

void main()
{
    int n, *ptr;
    scanf ("%d", &n);
    int a[n];
    printf ("Enter an array of size %d : ", n);
    for (int i=0; i<n; i++)
        scanf ("%d", &a[i]);
    ptr = a;
```

```
    int largest = findmax(ptr, n);
    printf ("The largest element is %.d \n", largest);
}
```

Problem-13 (swap numbers using call by reference)

```
#include <stdio.h>
void swap(int *a, int *b)
{
    int temp;
    temp = *a;
    *a = *b;
    *b = temp;
}
void main()
{
    int a, b;
    scanf ("%d %d", &a, &b);
    swap(&a, &b);
    printf ("a = %.d \t b = %.d ", a, b);
}
```