Jaypee Institute of information Technology, Noida

Software Development Fundamentals 1 - Lab Sheet

Weeks: Oct 8th -Oct20th

Assignment Type: Practice

Lab A & B (Arrays(1D& 2D)+Strings+Structures)

Instructions to be followed while carrying out the Lab:

1. Refer location (\\fileserver2\Computer Science & IT\ODD Sem 2018\B. Tech\1st Year\SDF -1 Lab\Arrays Help

2. Always save your lab work and keep backup of files

5. Perform the all the experiments

Q1. Visit the specified links to perform these lab experiments:

For Experiment 1:

Description: Demonstration of 1 D array while performing Insertion Sort

Link: http://cse02-iiith.vlabs.ac.in/exp4/simulation/1-D/index.html

1. Enter the size of array for selected problem and press OK.
2. Use Enter values to enter your own values in the box provided below for press Generate random values to generate a set of random values.
3. Press Start to start the experiment.
4. Click Next to get a step by step execution of the code.

Execute the experiment with different sets of inputs and analyze the output.

For Experiment 2:

Description: Demonstration of 2 D array by performing matrix multiplication

Link: http://cse02-iiith.vlabs.ac.in/exp4/simulation/2-D/index.html

1. Enter the size of rows and columns for array A and press OK.
2. Press Generate random values to generate a set of random values.
3. Enter the size of columns for array B and press OK.
4. Press Generate random values to generate a set of random values.
5. Press Start to start the experiment.
6. Click Next to get a step by step execution of the code.

Execute the experiment with different sets of inputs and analyze the output.

Q2: Write a program in C to read n number of values from the user in an array and display it in reverse order.

Q3: Write a program in C to copy the elements of one array into another array. Both these arrays are created by the user.

Q4: Write a program in C to count a total number of duplicate elements in an array entered by the user.

Q5: Write a program in C to count the frequency of each element of an array

Q6: Write a program in C to sort elements of array in ascending order

Q7: Write a program in C for the following. In a sorted list, to insert New value in the array inputted by the user.

Q8: Write a C program for a 2D array of size 3x3 and print the matrix as an output.
Consider Test Data as follows:
Input elements in the matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [0],[2] : 3
element - [1],[0] : 4
element - [1],[1] : 5
element - [1],[2] : 6
element - [2],[0] : 7
element - [2],[1] : 8
element - [2],[2] : 9
Expected Output :

The matrix is:
1 2 3
4 5 6

7 8 9

Q9: Write a C program for addition of two Matrices which are of same size.

Q10: Write a C program to find transpose of a given matrix entered by the user

Q12: Write a C program to find sum of rows and columns of a Matrix

Q13: Write a program in C to print or display upper triangular matrix

Q14: Write a program in C to accept a matrix and determine whether it is a sparse matrix

Q15: Write a program in C to count the number of triangles can be fromed from a given array. Go to the editor
Expected Output :
The given array is : 6 18 9 7 10
Number of possible triangles can be formed from the array is: 5

Q16: WAP in C to find the Frequency of Characters in a String

Q17: WAP in C to store information of a student (at least 4 components) using structures

Q18: WAP in C to calculate the length of a string and print the same

Q19: WAP in C to concatenate two strings and print the output

Q20: **Experiment Description: In this experiment you will understand how to define structures according to problem requirements. You will also do operations on structure elements.**

Procedure:

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1. Press start to start the experiment and select a value of N.
2. Press next to see the execution of the code
3. Relavant line in the code is shown here
4. The output of the code is shown in the right

Experiment:

Bank of Gujrat has decided to computerize all its records.
They hired a software programmer, Ravi.
He suggested that five pieces of data had to be maintained in every account.

They are :
1)Account type, either checking or savings
2)Account holder name
3)Branch in which the account is based
4)A unique account number
5)The current balance in the account

Ravi decides that using different variables to represent all this data would be messy and inefficient.
He decides that it would be better to represent the account's variables with the help of a structure.

Help Ravi write an account structure with the following variables:
char type:(max size 10)
char holder:(max size 30)
char branch:(max size 20)
char no:(account number,length 10)
unsigned int bal (stores current balance):

Example of an employee structure:

```
struct database {
unsigned int id_number;
unsigned int age;
unsigned int salary;
```

};
Now define an Account structure below:

Visit the following link to complete this experiment:

Link : http://cse02-iiith.vlabs.ac.in/exp5/simulation/index.html

Analyze the output by creating at least 5 structures of different types according to varied requirements of the users/applications.