Final Term Assignment
BSSE/BCS/MIT/MCS/BSIT

Semester: 1 **Subject: Programming Fundamentals** **Total Marks: 20**

Instructions:

- This assignment contains total 20 Problem Questions of multiple parts.
  - Due date for this assignment is 6 August 2014.
  - Your assigned project is also the part of this assignment.
  - You can get bonus marks by putting extra effort on proper documentation.
  - Use of Comments in coding will be appreciated.
  - Here is the recommended format to submit the assignment.
    1. Mention the Problem No & Problem Statement.
    2. Write note for first two problems with appropriate headings.
    3. For the rest of the problems, give a heading of **Code.**
    4. Copy your error free code from compiler.
    5. Paste it in your document file.
    6. Then give a heading of **Sample Output.**
    7. Execute your program & take the screen shot of output.
    8. Crop the Dos Screen Area and Past it in document.
  - This assignment can be done in approved member's group.
  - Project statement along with code should also be included in the document submitted.
  - Every group member must know each and everything about the assignment solution.
  - Any group member failing to justify the assignment will be failed in assignment i.e. get zero in assignment marks and will also lose 50% marks from viva.
  - Plagiarism and cheating in assignment will be punished by deducting all marks of assignment and 50% marks of viva.

Note:

"There are no shortcuts to success. The only way you can achieve success is Work hard and then pray a lot. Hard work always pays back in terms of benefits, satisfaction, experience, self confidence, respect and wealth. So never step back or shy to work hard and pray to be successful."

"Its worth to give a sincere try to the hardest task you will ever face because completion of a task is not in our hands, we can only work hard with sincerity and honesty and then pray to Allah Taala because completion is in hands of Allah Almighty."

"Always seek help in your brightest and darkest of times from Allah Taala and you will see that He is always there for you to provide help with all of His blessings."

I will be evaluating you by your sincere and honest efforts towards your task. Good luck!

Zain-Ul-Abideen Khan
CS & IT Department,
Superior University, Lahore

Problem Sheet

Problem No 1: Write a prescribed note on

a) Iterative Structures

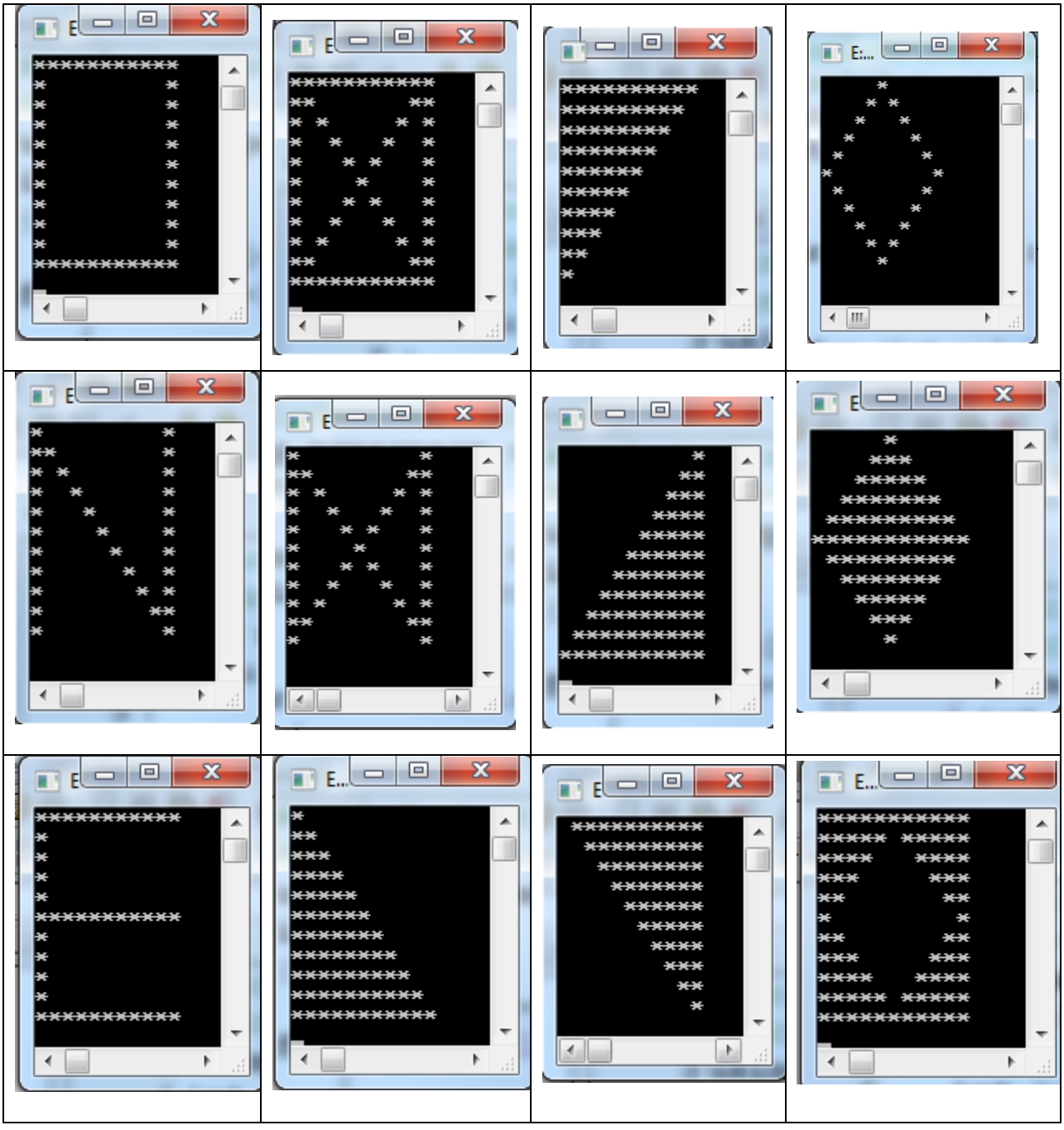
b) Selection Control Structure

c) Pointers

d) Functions **(Minimum 300 Words for each)**

Problem No 2: One Dimensional & Two Dimensional Arrays.

Problem No 3: Write a Program to print the following Patterns. (Using For Loop)



Problem No 4: Practice All the Patterns using while loop.

Problem No 5: Write a program to enter the numbers till the user wants and at the end it should display the count of positive, negative and zeros entered.

Problem No 6: Write a program to print all prime numbers from 1 to 300.

Problem No 7: Write a program to add first seven terms of the following series using loop:

$$\frac{1}{1!}+\frac{2}{2!}+\frac{3}{3!}\ldots$$

Try to use the User define function for Factorial of different values.

Problem No 8: Write a program to display the following pattern. (Using Loops)

```
A B C D E F G F E D C B A
A B C D E F   F E D C B A
A B C D E       E D C B A
A B C D           D C B A
A B C               C B A
A B                   B A
A                       A
```

Problem No 9: Write a program to display the following output.

```
          1
        1   1
      1   2   1
    1   3   3   1
  1   4   6   4   1
```

Problem No 10: Write a function to calculate the factorial value of any integer entered through the keyboard.

Problem No 11: write a function Power (a, b), to calculate the value of **a** raised to **b**.

Problem No 12: A positive integer is entered through the keyboard. Write a function to obtain the prime factors of this number.

For example, prime factors of 24 are 2, 2, 2 and 3, whereas prime factors of 35 are 5 and 7.

Problem No 13: Write a function that receives 5 integers and returns the sum, average and standard deviation of these numbers. Call this function from main() and print the result in main().

Problem No 14: Write a function to obtain the first **n** numbers of Fibonacci sequence. Where n will be taken from user in main(). In a Fibonacci sequence the sum of two successive terms gives the third term.

Example: 1 1 2 3 5 8 13 21 34 …

Problem No 15: Write a function to evaluate the series

$Sin(x) = x-(x^3/3!)+(x^5/5!)-(x^7/7!)+\ldots$

To five significant digits.

Problem No 16: Write a function to find the binary equivalent of a given decimal integer and display it.

Problem No 17: Write a program to ask the user to input the size of array of integer type then write a function to take input in this array and another function to display the entered numbers in this array.

Problem No 18: Write a program to create a dynamic array of float type of size **n,** where n will be entered from user. Then sort this array using **Bubble sort** method and display the sorted data.

Problem No 19: Write a program which performs the following tasks.

- Initialize a dynamic array of **n** elements in main().
- Pass the entire array to a function modify().
- In modify() multiply each element of array by 3.
- Return the control to main() and print the new array elements in main().

Problem No 20: (a) Write a program to pick up the largest number from any 5 row by 5 ~~column matrix.~~

~~**(b)** Write a program to obtain transpose of a 4x4 matrix. The transpose of a matrix is obtained by exchanging the elements of each row with the elements of the corresponding columns.~~

~~**(c)** Write a program to add two 6x6 matrix.~~

~~**(d)** Write a program to multiply any two 3x3 matrix.~~

~~**(e)** Write a program to obtain the determinant value of a 5x5 matrix.~~

**********~~***Best of Luck***~~**********