Programming Fundamentals

Lab Manual 6

Faculty of Information Technology

UCP Lahore Pakistan

Lab 06	
Topic	**Revision of Functions** **Introduction to Pointers**

Functions:

1. For research purposes and to better help students, the admissions office of your local university wants to know how well female and male students perform in certain courses. You receive a file that contains female and male student GPAs for certain courses. Due to confidentiality, the letter code **f** is used for female students and **m** for male students. Every file entry consists of a letter code followed by a GPA. Each line has one entry. The number of entries in the file is unknown. Write a program that computes and outputs the average GPA for both female and male students. Format your results to two decimal places. Your program should use the following functions:
    a. Function **openFiles:** This function opens the input and output files, and sets the output of the floating-point numbers to two decimal places in a fixed decimal format with a decimal point and trailing zeros.
    b. Function **initialize:** This function initializes variables such **as countFemale, countMale, sumFemaleGPA, and sumMaleGPA.**
    c. Function **sumGrades:** This function finds the sum of the female and male students' GPAs.
    d. Function **averageGrade:** This function finds the average GPA for female and male students.
    e. Function **printResults:** This function outputs the relevant results.
    f. There can be no global variables. Use the appropriate parameters to pass information in and out of functions.

Pointers:

Level 1 Practice:

2. Write a program to print the address of a variable whose value is input from user.
3. Write a program to print the address of the pointer to a variable whose value is input from user.
4. Write a program to print the value of the address of the pointer to a variable whose value is input from user.
5. Write a program to print a number which is entered from keyboard using pointer.
6. Write a function which will take pointer and display the number on screen. Take number from user and print it on screen using that function.
7. Write a program to find out the greatest and the smallest among three numbers using pointers.

Level 2 Practice:

8. Write a program to find the factorial of a number using pointers.
9. Write a program to reverse the digits a number using pointers.

Level 3 Practice: following integer array of size 10 and stores values in it and dry run / write outputs:

int arr[10] = {10,20,30,40,90,70,80,60,0}

int* ptr = &arr[4];

10. cout << ++ptr << endl;
11. cout << ptr++ << endl;
12. cout << *ptr++<<endl;
13. cout<<*++ptr<<endl;
14. cout <<*++ptr << " "<<++ptr* << endl;
15. cout << --ptr << endl;
16. cout << ptr-- << endl;
17. cout << *ptr--<<endl;
18. cout<<*--ptr<<endl;
19. cout <<*--ptr << " "<<--ptr* << endl;