

**ICS 103 – Computer Programming in C
Summer Semester 2008 (073)**

Lab # 8 (Functions with Output Parameters -using pointers & Recursive Functions)

Objective:

Learn how to write user defined functions.

Scope:

The student should know the following by the end of this lab:

1. void Functions with Input/Output Parameters
2. Recursive Functions

Discussion:

The following problem will be discussed in detail on black board:

Write a function that reads an amount that a customer wants to withdraw from an ATM machine. The amount should be a multiple of 100. Your function should pass this amount to another function as an input parameter and returns as output parameters the number of 500's and the number of 100's that should be given to the customer.

Exercises:

Solve the following problems:

1. Write a C function to take **a, b** and **c** as **input parameter** and return **average, maximum** and **minimum** of these three as **output parameters**. Write main program to test this function and print results.
2. Write a recursive function that displays the steps in the *Tower of Hanoi* puzzle.
3. Write a recursive function that calculates the value of X to the power n .

$$X^n = X^{n-1} * X \rightarrow n > 0$$

$$X^n = X^{n+1} \div X \rightarrow n < 0$$

$$X^0 = 1$$

Evaluation:

Your grade will depend on your active participation and seriousness during the lab.