National University of Computer and Emerging Sciences



Lab Manual

for

Object Oriented Programming

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Lab Manual 1

**Objectives:**

After performing this lab, students shall be able to:

* Have an improved understanding of pointers.
* Declaring and Initializing pointers
* Pointer Operations

**Problem 1**

A local zoo wants to keep track of how many pounds of food each of its three monkeys eats each day during a typical week. Write a program that stores this information in a two dimensional 3x5 array, where each row represents a different monkey and each column represents a different day of the week. The program should first have the user input the data for each monkey. Then it should create a report that includes the following information: Write the following code and observe the output:

* Average amount of food eaten per day by the whole family of monkeys.
* The least amount of food eaten during the week by any one monkey.
* The greatest amount of food eaten during the week by any one monkey.

**Input Validation:** Do not accept negative numbers for pounds of food eaten.

**Problem 2**

Write a program that asks the user to enter an item’s wholesale cost and its markup percentage. It should then display the item’s retail price.

For example:

* If an item’s wholesale cost is 5.00 and its markup percentage is 100%, then the item’s retail price is 10.00.
* If an item’s wholesale cost is 5.00 and its markup percentage is 50%, then the item’s retail price is 7.50.

The program should have a function named calculateRetail that receives the wholesale cost and the markup percentage as arguments and returns the retail price of the item.

**Input Validation:** Do not accept negative values for either the wholesale cost of the item or the markup percentage.

**Problem 3**

Write the following code and observe the output:

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| int a=1, b=3, c=5;  int \* p;  int \* q;  int \* r;  p=& a;  q=& b;  r=& c;  cout<< a<<'\t'<<p<<'\t'<<\*p<<'\t'<<&p<<'\t'<<&a<<endl;  cout<<b<<'\t'<<q<<'\t'<<\*q<<'\t'<<&q<<'\t'<<&b<<endl;  cout<< c<<'\t'<<r<<'\t'<<\*r<<'\t'<<&r<<'\t'<<&c<<endl; |

**Problem 4**

Given two interger x and y (take input from user), write a C++ program that finds their sum, difference, product and square using pointers.

**For Example:**

**Input:**

Please enter first number: 3

Please enter second number: 2

**Output:**

Sum of numbers is: 5

Difference of numbers is: 1

Product of numbers is: 6

Square of numbers are: 9, 4

**Problem 3**

**Problem 3**

**Problem 5**

Write a C++ program that takes input height and width of rectangle and COMPUTE area using pointers.

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| **Example Input:**  Height : 12  Width : 3  **Output:**  Area: 36 |

**Problem 6**

Write a C++ program that finds and prints the mean of following three integers using pointer variables.

int **a**=10;

int **b**=15;

int **c**=12;

**Problem 7**

Write a C++ program that takes 3 numbers from user and print largest and smallest number using pointer variables.

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| **Example Input:**  Enter three numbers  Num1: 3  Num2: 1  Num3: 5  **Output:**  Num3 is largest number  Num2 is smallest number |