National University of Computer and Emerging Sciences



Laboratory Manual

for

Programming Fundamentals

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| Section | Programming Fundamentals (G) |
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## Objectives

Topics will cover in this lab

* Lecture on functions.
* Pass by value, pass by reference.
* Over loading.

## In Lab: Problems / Exercises

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| Exercise 1: Pass by value | **Estimated completion time (mins):** 60 |

1. Input number1,number2 and number3 from the user .Pass these 3 integer variables number1, number2, number3 to a function. Your function should return the biggest number. Print this number in main.
2. Write a Boolean function (IdentifyEvenNumber) that takes a number as a parameter and find whether it is even or not. It will return 1 if number is even otherwise 0.

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| Exercise 2: Pass by reference | **Estimated completion time (mins):** 45 |

1. Input number1,number2 and number3 from the user .Pass 4 integer variables, number1, number2, number2,bignumber to a function. Your function must be of void type .Calculate the biggest number amd store it in “bignumber” Print this number in main.
2. Write a program in C++ to swap two numbers.    
   **Output:**  
   Swap two numbers :  
   Input 1st number : 25   
   Input 2nd number : 39   
   After swapping the 1st number is : 39   
   After swapping the 2nd number is : 25
3. Input a number ‘n’ from user .Write a function which takes 2 parameters, first a number ‘n’, second fact as a parameter. It will calculate its factorial and store it in fact. print this factorial in main.

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| Exercise 3: Overloading | **Estimated completion time (mins):** 45 |

1. What is the output of this program

#include <iostream>

using namespace std;

void print(int i) {

  cout << " Here is int " << i << endl;

}

void print(double  f) {

  cout << " Here is float " << f << endl;

}

void print(char\* c) {

  cout << " Here is char\* " << c << endl;

}

int main() {

  print(10);

  print(10.10);

  print("ten");

  return 0;

}

1. Write a menu driven program to calculate area of a circle, area of triangle, area of clyinder. Use function over loading.

For circle: float Area(float radius)

For triangle: float Area(float height, float base)

For circle: float Area(float height, float radius)

Formulas : r = radius, h = height

1. Circle A = pi\*r^2
2. Triangle A = h \* b/ 2
3. Cylinder A = 2\*pi\*r\*h + 2\*pi\*r^2

Your program should display a menu like

#####Welcome to Area Calculator######

1. Press 1 to calculate area of a circle.
2. Press 2 to calculate area of a triangle.
3. Press 3 to calculate area of a cylinder.

Enter your choice:

Eg: User entered 1

Then you should ask for radius.

Eg: User entered 2

Then you should calculate the area and display it.

Your output should look like:

The area of circle with radius 2 is: 12.56