**COMSATS University Islamabad**

**Lahore Campus**

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DEPARTMENT OF COMPUTER SCIENCE

Programming Fundamentals

LAB TASK (CSC103)

PREPARED BY

Abdul Karim Shahid,

Assistant Professor

Create a DOC file to upload your work on turnitin

**Doc File Format for labwork submission**

**Title Page:**

* Name,
* registration number,
* instructor’s name,
* Programme and Section

**Lab task Solution:**

* Problem statement
* Solution (C code) Please include proper comments in your code
* Screen shot of sample output

**Learning Objectives:** The objective of this exercise is to get you familiar with pointers, different pointer referencing techniques and array traversing using pointers

**OBS: For each exercise you need to write the C program and after running your program you need to upload your doc file on Turnitin.**

**Exercise 1.** Given the following piece of code

int i = 10;

char c= 'A';

double f = 25.5;

int \*iptr = &i;

char \*cptr = &c;

You are expected to write the result of following statements from the output you got after running your program for the above given values.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Value of i** | **Address of i** | **Value of iptr** | **Address of iptr** | **Derefrenced Value of \*iptr** | **Size of iptr** | **Size of i** |
|  |  |  |  |  |  |  |
| **Value of c** | **Address of c** | **Value of cptr** | **Address of cptr** | **Derefrenced Value of \*cptr** | **Size of cptr** | **Size of c** |
|  |  |  |  |  |  |  |

Note: The format specifier for displaying address of any data item is %p

**Exercise 2**

Consider the following array of integers:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Array of integers, named *‘arr’*** | | | | | | | | | |
| 2 | 6 | -4 | 8 | 10 | -12 | 14 | 16 | 18 | 20 |
| num[0] | num[1] | num[2] | num[3] | num[4] | num[5] | num[6] | num[7] | num[8] | num[9] |

Implement the following pointer notations to traverse and display the given array ‘arr’.

1. Printing array using array[i] notation.
2. Printing array using ptr[i] notation.
3. Printing array using \*(array+i) notation.
4. Printing array using \*(ptr+i) notation.
5. Printing array using \*ptr notation.

**Exercise 3:**Write, compile and execute the program below. Explain why the function swap does not work properly. Using pointers, change the program to make the function swap to work properly.

**#include <stdio.h>**

**#include <stdlib.h>**

**void swap (int a, int b);**

**int main()**

**{**

**int c = 10, d = 25;**

**printf("\nBefore calling the function swap, c=%d and d=%d", c, d);**

**swap(c,d);**

**printf("\nAfter calling the function swap, c=%d and d=%d\n", c, d); return 0;**

**}**

**void swap(int a, int b)**

**{**

**int temp;**

**temp = a;**

**a = b;**

**b = temp;**

**}**