

SWT11022: Practical for Fundamentals of Programming

Department of Information & Communication Technology

Faculty of Technology

South Eastern University of Sri Lanka

Time: - 10.30am - 12.30 pm

Labsheet 12

Title: Introduction to the Pointers

Objective:

- Learn the syntax and structure of pointers.
- Understand the usage of pointers for storing address.
- Understand accessing pointers.

Pointers in C

1. **Declaration:** Use the * symbol before the data type to declare a pointer.

```
int a = 10;
```

```
int *ptr;
```

2. **Initialization:** Assign the memory address of a variable using the address-of operator (&).

```
ptr = &a;
```

3. **Dereferencing:** Access the value stored at the memory address pointed to by the pointer using the dereference operator (*).

```
printf("Value of a using variable: %d\n", a);
```

```
printf("Value of a using pointer: %d\n", *ptr);
```

4. **Pointer and Address Printing**

```
printf("Address of a: %p\n", (void*)&a);
```

```
printf("Value stored in ptr (address of a): %p\n", (void*)ptr);
```

```
printf("Address of ptr itself: %p\n", (void*)&ptr);
```

5. **Pointer Arithmetic:** Add or subtract integers to a pointer to move it within the same

memory block (use with caution)

```
printf("\nPointer Arithmetic:\n");

printf("ptr = %p\n", (void*)ptr);

printf("ptr + 1 = %p\n", (void*)(ptr + 1))
```

Exercise 01 :

1. Write a C program to following scenario.

a) Declare and initialize variables int_var, float_var, char_var with data types int, float and char respectively.

```
int_var = 45;
```

```
Float_var = 57.234;
```

```
Char_var = 'A';
```

b) Print the values of int_var, float_var, char_var.

c) Print the address of above variables.

d) Declare the pointers int_var_pointer, float_var_pointer, char_var_pointer with the data type int, float, char respectively.

e) Initialize the above pointers int_var_pointer, float_var_pointer and char_var_pointer with address of int_var, float_var and char_var respectively.

f) Print pointer variables.

g) Print value of int_var, float_var and char_var by dereferencing the address by using pointers.

h) Perform the following arithmetic operations with pointers.

- int_var_pointer+1;
- float_var_pointer+1;
- char_var_pointer+1;
-

Exercise 02 :

1. Write a C program to get 10 integer numbers from user and find the sum of 10 numbers using arrays and pointers

Discussion :

- ☐ Dereferencing
- ☐ Pointer arithmetic

10/04/2025

Report Submission Guidelines

- Submit the **Report** by **21/04/2025**.
- Late submissions will not be accepted.

Report Structure

- Practical No
- Date of Submission
- Title
- Objective of the practical.
- Exercise
- Challenges
- Discussion
- References