Bing

Here is a lab report with the given code and output:

DSA-I Lab Report format:

Name of the Experiment:

Study of Pointer and its Operations

Objective:

1. To understand the concept of pointers in C programming.
2. To learn how to perform arithmetic operations with pointers.
3. To know the basic operation of pointer.

Introduction:

Pointers are a powerful feature of the C programming language. They allow us to directly access and manipulate memory addresses, which can be useful for a variety of tasks such as dynamic memory allocation, passing arguments to functions, and working with arrays. In this experiment, we will study the basic operations of pointers and how to perform arithmetic operations with them.

Arithmetic Operation of Pointer:

Pointer arithmetic is a way to perform arithmetic operations on memory addresses. For example, if we have a pointer `p` that points to an integer variable `x`, we can increment the pointer by one using the `++` operator, which will make it point to the next integer in memory. Similarly, we can decrement the pointer using the `--` operator, or add or subtract an integer value from it using the `+` and `-` operators.

Source Code:

```
#include <stdio.h>
#include <time.h>

void linearSearch(int *arr, int target){
    while (*arr!=NULL){
```

```
        if (*arr++ == target){
            printf("Found!\n");
            return;
        }
    }
    printf("Not Found!\n");
}

int main(){
    int ara[] = {2, 3, 4, 5};
    int key;
    printf("Value to Search: ");
    scanf("%d", &key);
    int *ptr = ara;
    linearSearch(ptr, key);

    int n = 4444;
    int *p = &n;
    int **p2 = &p;
    **p2+=1;
    char v2[10];
    printf("%d\n%d\n%d\n%x\n%x\n%x\n%x\n", n, *p, **p2, p, *p2, p2, &v2);

    int arr[] = {10, 100, 200};
    int i, *pArr[3];
    char *sArr[] = {"Nahid", "Hasan", "Arif"};

    for (i = 0; i < 3; i++){
        pArr[i] = &arr[i];
        printf("%d %s\n", *pArr[i], sArr[i]);
    }
    return 0;
}
```

Output:

```
Value to Search: 4
Found!
4445
4445
4445
619ffc18
619ffc18
619ffc10
619ffc06
10 Nahid
100 Hasan
200 Arif
```

Discussion:

In this experiment, we studied the basic operations of pointers and how to perform arithmetic operations with them. We learned how to declare and initialize pointers, how to access the value stored at a memory address using the dereference operator (*), and how to perform arithmetic operations on memory addresses. We also saw how pointers can be used to pass arguments to functions and work with arrays. Additionally, we learned how to use double pointers (**) to manipulate the value stored at a memory address indirectly. Overall, this experiment helped us gain a better understanding of how pointers work in C programming.