

Roll No: 220950320059

Name: Tushar Sugriv Kadam

Roll No: 220950320059

#### Assignment 4: Pointers in C

**Q1. Write a C Program to swap 2 numbers without using third variable using pointers**

**Expected Output :**

**Enter number1 : 10**

**Enter number2 : 20**

**Before Swap : number1 is 10 and number2 is 20**

**After Swap : number1 is 20 and number2 is 10**

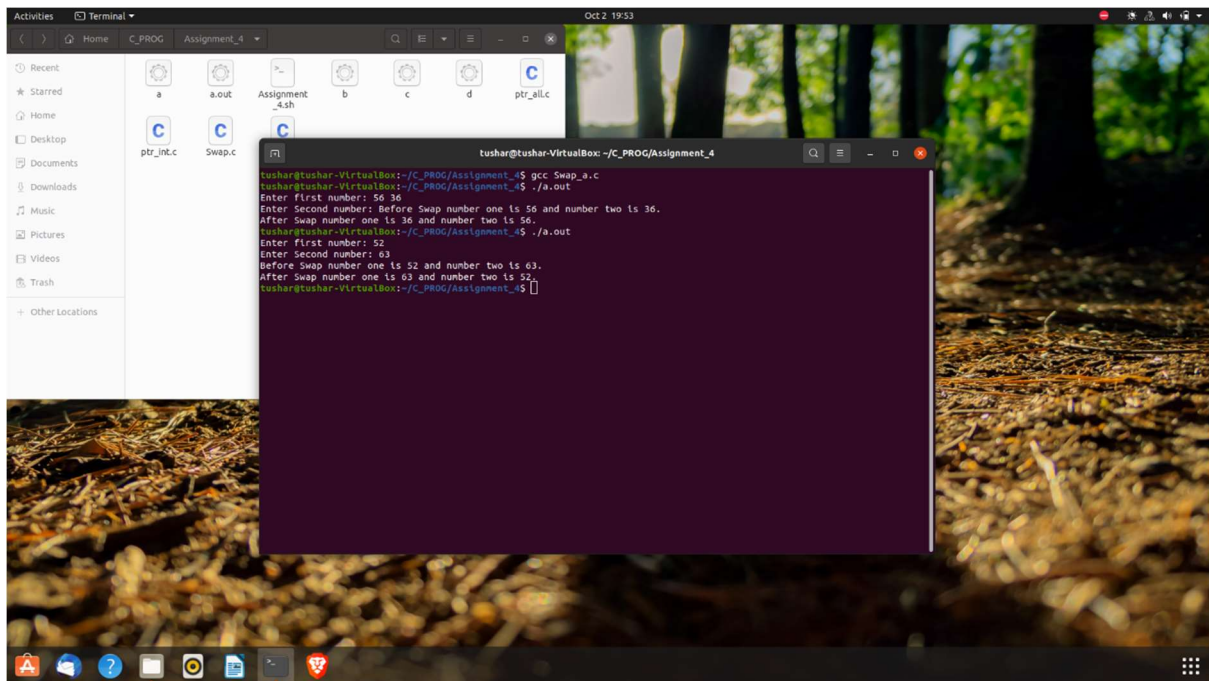
**Code:**

```
#include<stdio.h>

int main()
{
    int a, b;
    int *p,*q;
    p = &a;
    q = &b;
    printf("Enter two numbers: \n");
    scanf("%d%d",p,q);
    printf("The Entered elements are %d,%d\n",a,b);
    *p = *q + *p ;
    *q = *p - *q ;
    *p = *p - *q ;
    printf("The Swaped elements are %d,%d\n",*p,*q);
    return 0;
}
```

Roll No: 220950320059

Output:



The screenshot shows a Linux desktop environment. In the background, there is a file manager window displaying the contents of the `C_PROG/Assignment_4` directory, which includes files `a`, `a.out`, `Assignment_4.sh`, `b`, `c`, `d`, and `ptr_err.c`. A terminal window is open in the foreground, showing the execution of a C program named `Swap_a.c`. The program prompts the user to enter two numbers and then displays the values before and after a swap operation.

```
tushar@tushar-VirtualBox: ~/C_PROG/Assignment_4
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$ gcc Swap_a.c
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$ ./a.out
Enter first number: 56 36
Enter Second number: Before Swap number one is 56 and number two is 36.
After Swap number one is 36 and number two is 56.
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$ ./a.out
Enter first number: 52
Enter Second number: 63
Before Swap number one is 52 and number two is 63.
After Swap number one is 63 and number two is 52.
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$
```

**Q2. Write a C Program to swap 2 numbers with using third variable and use call by reference.**

**Expected Output :**

**Enter number1 : 50**

**Enter number2 : 60**

**Before Swap : number1 is 50 and number2 is 60**

**After Swap : number1 is 60 and number2 is 50**

**Code:**

```
#include<stdio.h>

void Swap(int *,int *);

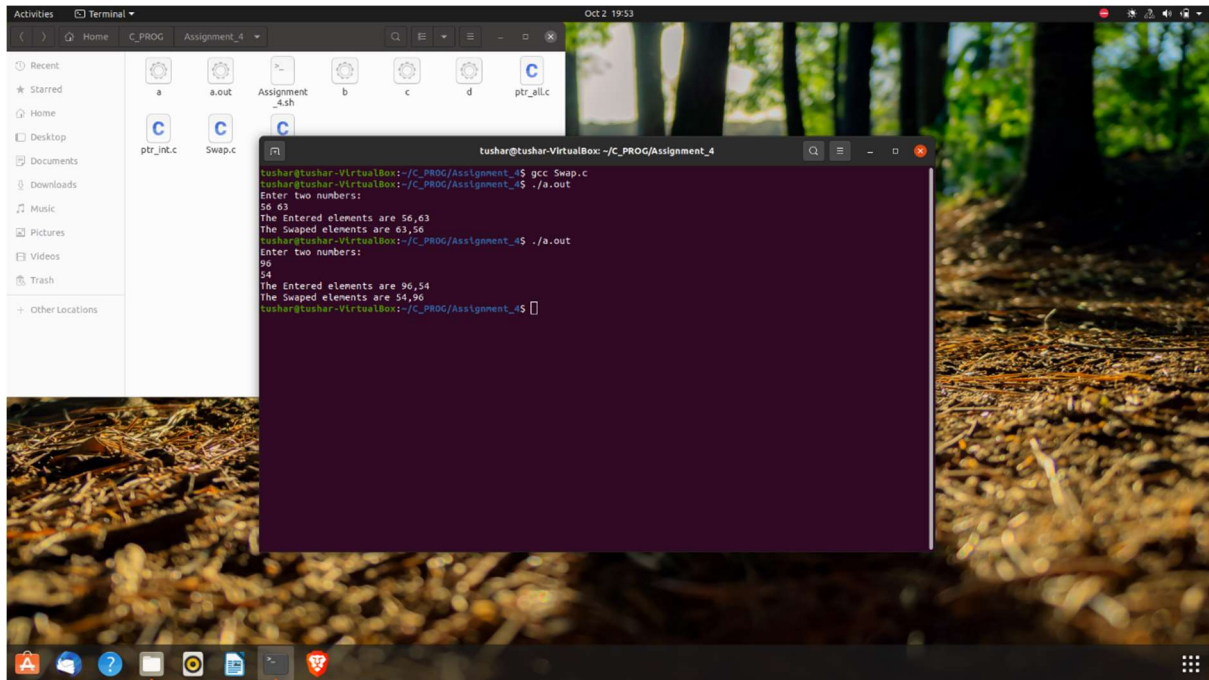
int main()
{
    int a,b;
    int *p, *q;
    p = &a;
    q = &b;
    printf("Enter first number: ");
    scanf("%d",&a);
    printf("Enter Second number: ");
    scanf("%d",&b);
    printf("Before Swap number one is %d and number two is %d.\n",*p,*q);
    Swap(p, q);
    printf("After Swap number one is %d and number two is %d.\n",*p,*q);
    return 0;
}

void Swap(int *i, int *j)
{
    int temp;
    temp = *i;
    *i = *j;
    *j = temp;
}
```

Roll No: 220950320059

}

## Output:



The screenshot shows a Linux desktop environment with a file manager window in the background and a terminal window in the foreground. The file manager displays a directory named 'C\_PROG' containing files 'a', 'a.out', 'Assignment\_4.sh', 'b', 'c', 'd', and 'ptr\_all.c'. The terminal window, titled 'tushar@tushar-VirtualBox: ~/C\_PROG/Assignment\_4', shows the execution of a C program named 'Swap.c'. The program prompts the user to 'Enter two numbers:' and displays the results of swapping two numbers in two separate runs.

```
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$ gcc Swap.c
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$ ./a.out
Enter two numbers:
56 63
The Entered elements are 56,63
The Swaped elements are 63,56
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$ ./a.out
Enter two numbers:
96 54
The Entered elements are 96,54
The Swaped elements are 54,96
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$
```

**Q3. Write a C program that declares and initializes (to any value you like) a char, an int, a double and**

**float. Your program should then print the address of, and value stored in, each of the variables.**

**Use the format string "%u" [%p in hex] to print the addresses as**

**unsigned integers.**

**Hint: You can use the character "&" to find addresses.**

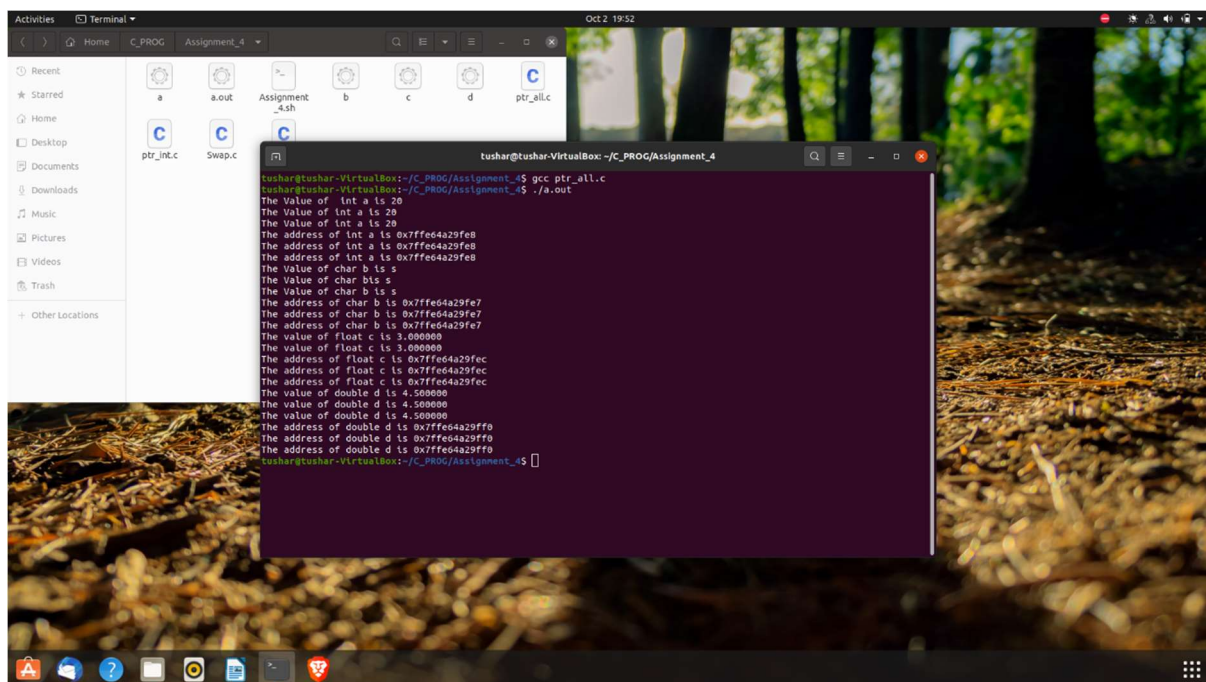
**Code:**

```
#include<stdio.h>

int main()
{
    int a = 20;
    char b = 's';
    float c = 3.0 ;
    double d = 4.5;
    int *p;
    char *q;
    float *r;
    double *s;
    p = &a;
    q = &b;
    r = &c;
    s = &d;
    printf("The Value of int a is %d\n",a);
    printf("The Value of int a is %d\n",*p);
    printf("The Value of int a is %d\n",&a);
    printf("The address of int a is %p\n",p);
    printf("The address of int a is %p\n",&a);
    printf("The address of int a is %p\n",&*p);
    printf("The Value of char b is %c\n",b);
    printf("The Value of char bis %c\n",*q);
    printf("The Value of char b is %c\n",&b);
```

```
printf("The address of char b is %p\n",q);  
printf("The address of char b is %p\n",&b);  
printf("The address of char b is %p\n",*q);  
printf("The value of float c is %f\n",c);  
printf("The value of float c is %f\n",*r);  
//printf("The value of float c is %f\n",*r);  
printf("The address of float c is %p\n",&c);  
printf("The address of float c is %p\n",r);  
printf("The address of float c is %p\n",*r);  
printf("The value of double d is %lf\n",d);  
printf("The value of double d is %lf\n",*s);  
printf("The value of double d is %lf\n",*d);  
printf("The address of double d is %p\n",s);  
printf("The address of double d is %p\n",&d);  
printf("The address of double d is %p\n",*s);  
  
return 0;  
  
}
```

### Output:



```
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$ gcc ptr_all.c  
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$ ./a.out  
The value of int a is 20  
The Value of int a is 20  
The address of int a is 0x7ffe64a29fe8  
The address of int a is 0x7ffe64a29fe8  
The Value of char b is s  
The Value of char b is s  
The address of char b is 0x7ffe64a29fe7  
The address of char b is 0x7ffe64a29fe7  
The address of char b is 0x7ffe64a29fe7  
The value of float c is 3.000000  
The value of float c is 3.000000  
The address of float c is 0x7ffe64a29fec  
The address of float c is 0x7ffe64a29fec  
The address of float c is 0x7ffe64a29fec  
The value of double d is 4.500000  
The value of double d is 4.500000  
The value of double d is 4.500000  
The address of double d is 0x7ffe64a29ff0  
The address of double d is 0x7ffe64a29ff0  
The address of double d is 0x7ffe64a29ff0  
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$
```

**Q4. Write a C program to declare an integer and an integer pointer to it.**

**Initialize the integer variable. Print the value of the int variable using pointer variable.**

**Hint: You can use dereferencing operator \*.**

**Code:**

```
#include<stdio.h>

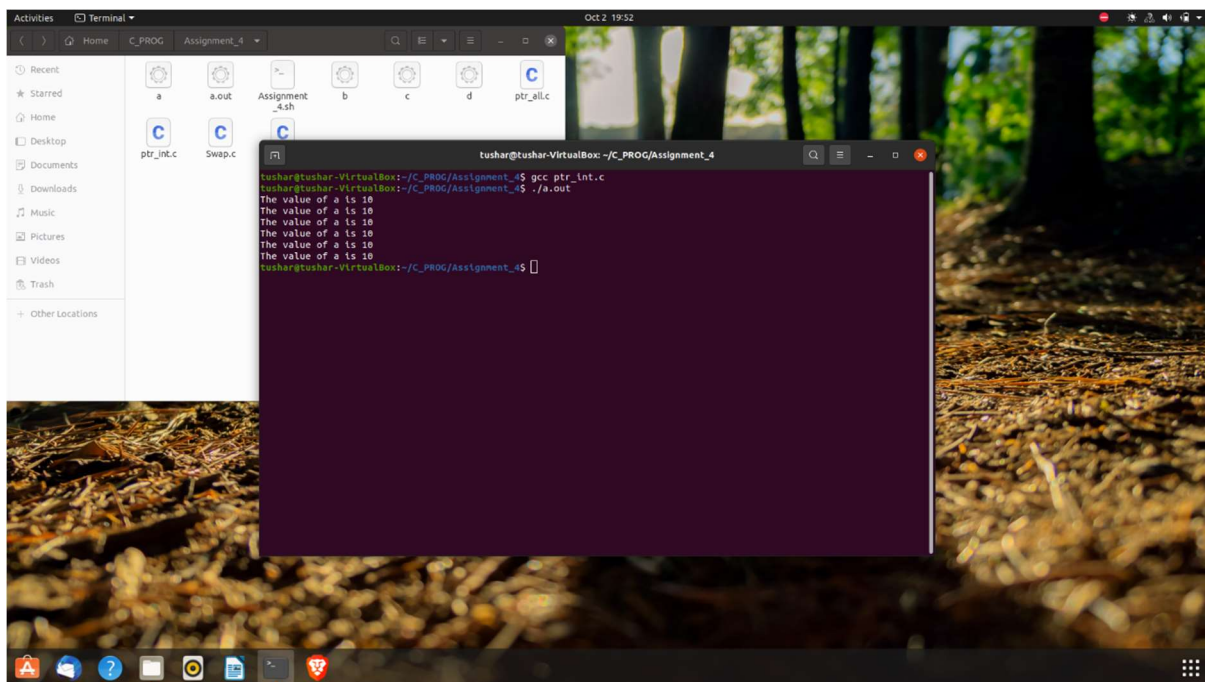
int main()
{
    int a = 10,*p,**q;

    p = &a;
    q = &p;

    printf("The value of a is %d\n",a);
    printf("The value of a is %d\n",*p);
    printf("The value of a is %d\n",**q);
    printf("The value of a is %d\n",*&a);
    printf("The value of a is %d\n",**(&p));
    printf("The value of a is %d\n",***(&q));

    return 0;
}
```

**Output:**



```
tushar@tushar-VirtualBox: ~/C_PROG/Assignment_4
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$ gcc ptr_int.c
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$ ./a.out
The value of a is 10
The value of a is 10
The value of a is 10
The value of a is 10
The value of a is 10
The value of a is 10
tushar@tushar-VirtualBox:~/C_PROG/Assignment_4$
```