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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;
}
```

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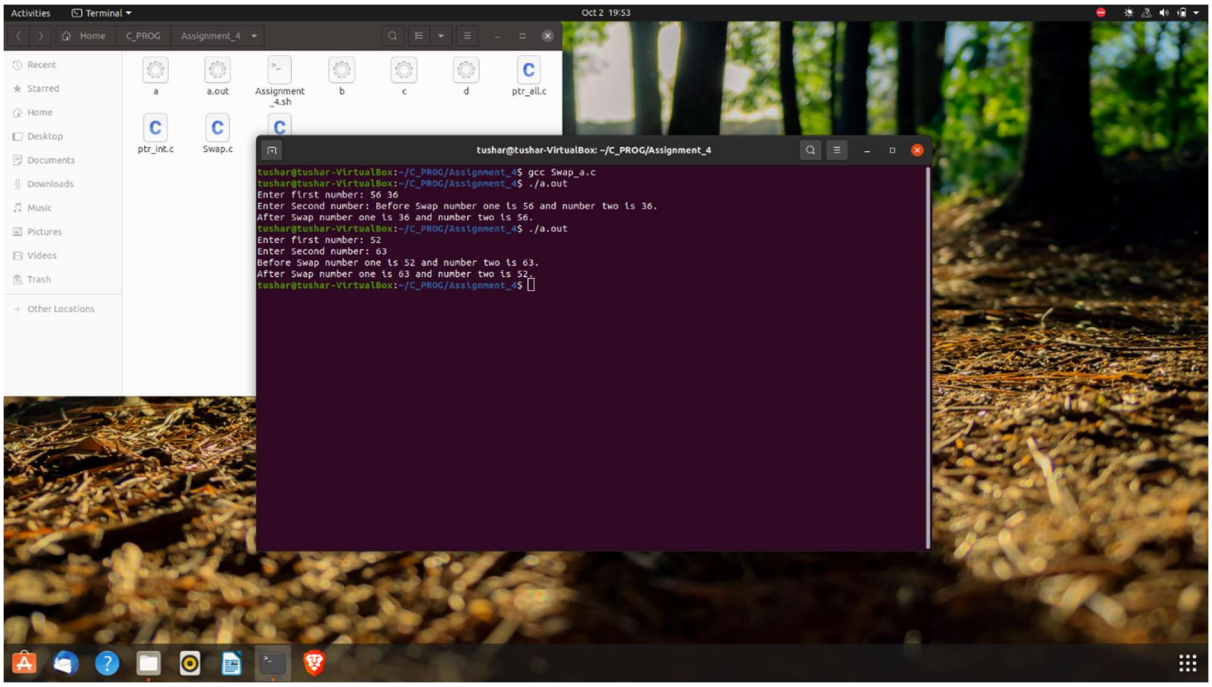
Output:



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

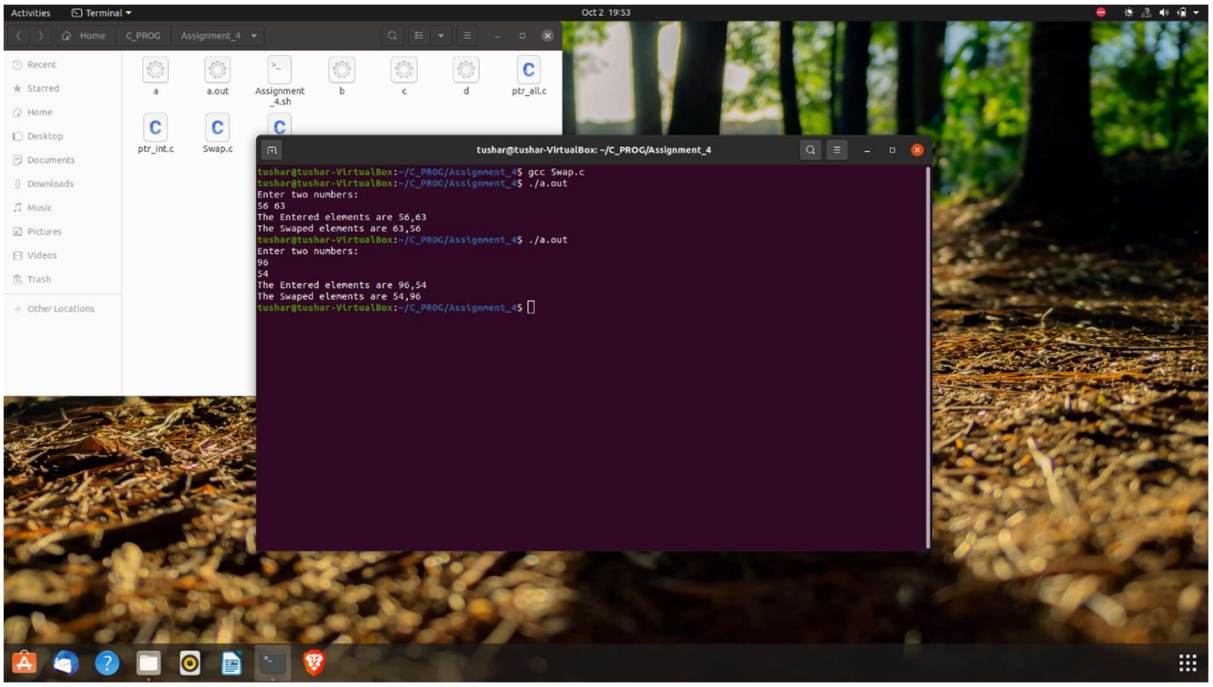
After Swap : number1 is 60 and number2 is 50

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;
```

}

Output:


Activities
Terminal
Oct 2 19:53
Home
C_PROG
Assignment_4
Recent
Starred
Home
Desktop
Documents
Downloads
Music
Pictures
Videos
Trash
Other Locations
a
a.out
Assignment_4.sh
b
c
d
ptr_all.c
ptr_int.c
Swap.c
tushar@tushar-VirtualBox: ~/C_PROG/Assignment_4
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.

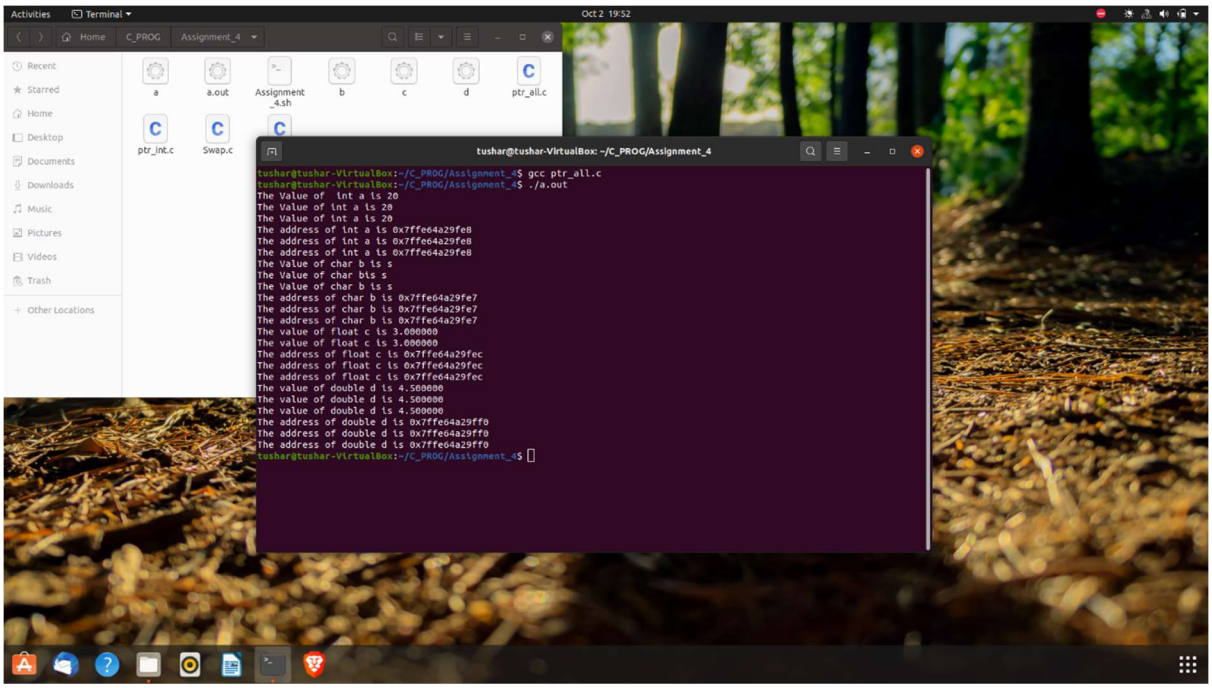
Hint: You can use the character “&” to find addresses.

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:



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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: