**A49 - WAP to define a macro SIZEOF(x), without using sizeof operator**

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Name : Nestin Gregorios Sunny

Date : 15.07.2025

Description :

Define a macro SIZEOF(x), without using sizeof operator

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#include<stdio.h>

#include<stdlib.h>

#define SIZE\_OF(x) \

(char\*)(&x + 1) - (char \*)(&x) \

int main()

{

int i;

short int sh;

char ch;

float f;

double d;

unsigned long int uli;

long int li;

signed int si;

long long int lli;

signed long int sli;

int arr[10];

int \*ptr;

printf("Size of int : %ld bytes\n", SIZE\_OF(i));

printf("Size of short : %ld bytes\n", SIZE\_OF(sh));

printf("Size of char : %ld bytes\n", SIZE\_OF(ch));

printf("Size of float : %ld bytes\n", SIZE\_OF(f));

printf("Size of double : %ld bytes\n", SIZE\_OF(d));

printf("Size of unsigned int : %ld bytes\n", SIZE\_OF(uli));

printf("Size of long int : %ld bytes\n", SIZE\_OF(li));

printf("Size of signed int : %ld bytes\n", SIZE\_OF(si));

printf("Size of arr[] : %ld bytes\n", SIZE\_OF(arr));

printf("Size of int pointer : %ld bytes\n", SIZE\_OF(ptr));

return 0;

}

**A50 - WAP to define a macro swap (t, x, y) that swaps 2 arguments of type t**

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Name : Nestin Gregorios Sunny

Date : 16.07.2025

Description :

Define a macro swap (t, x, y) that swaps 2 arguments of type t

Sample Input :

1. Int

2. char

3. short

4. float

5. double

6. string

Enter you choice : 1

Enter the num1 : 10

Enter the num2 : 20

Sample Output :

After Swapping :

num1 : 20

num2 : 10

\*/

#include<stdio.h>

#include<stdlib.h>

#define SWAP\_NO(type, n1, n2) \

{ \

type temp = (n1); \

(n1) = (n2); \

(n2) = temp; \

}

int main()

{

int choice;

int num1, num2;

char ch1, ch2;

float f1, f2;

double d1, d2;

char \*s1 = malloc(20);

char \*s2 = malloc (20);

printf("1. Int\n");

printf("2. Char\n");

printf("3. Short\n");

printf("4. Float\n");

printf("5. Double\n");

printf("6. String\n");

printf("Enter your choice : ");

scanf("%d", &choice);

switch(choice)

{

case 1:

printf("Enter the num1 : ");

scanf("%d", &num1);

printf("Enter the num2 : ");

scanf("%d", &num2);

SWAP\_NO(int, num1, num2);

printf("After Swapping : \nnum1 : %d \nnum2 : %d\n", num1, num2);

break;

case 2:

printf("Enter the ch1 : ");

scanf(" %c", &ch1);

printf("Enter the ch2 : ");

scanf(" %c", &ch2);

SWAP\_NO(char, ch1, ch2);

printf("After Swapping : \nch1 : %c \nch2 : %c\n", ch1, ch2);

break;

case 3:

printf("Enter the num1 : ");

scanf("%hd", (short int \*)&num1);

printf("Enter the num2 : ");

scanf("%hd", (short int \*)&num2);

SWAP\_NO(short, num1, num2);

printf("After Swapping : \nnum1 : %hd \nnum2 : %hd\n", num1, num2);

break;

case 4:

printf("Enter the num1 : ");

scanf("%f", &f1);

printf("Enter the num2 : ");

scanf("%f", &f2);

SWAP\_NO(float, f1, f2);

printf("After Swapping : \nnum1 : %f \nnum2 : %f \n", f1, f2);

break;

case 5:

printf("Enter the num1 : ");

scanf("%lf", &d1);

printf("Enter the num2 : ");

scanf("%lf", &d2);

SWAP\_NO(double, d1, d2);

printf("After Swapping : \nnum1 : %g \nnum2 : %g\n", d1, d2);

break;

case 6:

printf("Enter the num1 : ");

scanf(" %s", s1);

printf("Enter the num2 : ");

scanf(" %s", s2);

SWAP\_NO(char \*, s1, s2);

printf("After Swapping : \nnum1 : %s \nnum2 : %s\n", s1, s2);

break;

default:

printf("Wrong Choice!!!\n");

}

return 0;

}