1. **Write a C program to swap two numbers using call by reference.**

#include <stdio.h>

int main()

{

int a, b, temp;

int \*p1, \*p2;

printf("Enter two numbers: ");

scanf("%d %d", &a, &b);

p1 = &a;

p2 = &b;

temp = \*p1;

\*p1 = \*p2;

\*p2 = temp;

printf("After swapping: a = %d, b = %d\n", a, b);

return 0;

}

1. **Design a function that takes two integers as arguments and exchanges their values using call by reference.**

#include <stdio.h>

*void* swap(*int* \**a*, *int* \**b*);

*int* main()

{

*int* m, n;

    printf("Enter Two Numbers: ");

    scanf("%d %d", &m, &n);

    printf("Numbers before swapping:\n m: %d\n n: %d\n", m, n);

    swap(&m, &n);

    printf("Numbers after swapping:\n m: %d\n n: %d\n", m, n);

    return 0;

}

*void* swap(*int* \**a*, *int* \**b*)

{

*int* temp;

    temp = \**a*;

    \**a* = \**b*;

    \**b* = temp;

}

1. **Create a C program that uses call by reference to add two numbers and store the result in the first variable.**  
   #include <stdio.h>

*int* add(*int* \**a*, *int* \**b*);

*int* main()

{

*int* x, y;

    printf("Enter two Numbers to be addded: ");

    scanf("%d %d", &x, &y);

    add(&x, &y);

    printf("The Sum of the Two Numbers is %d", x);

    return 0;

}

*int* add(*int* \**a*, *int* \**b*)

{

    \**a* += \**b*;

}

1. **Write a function that takes a pointer to an integer as an argument and increments the value of the integer using call by reference.**

#include <stdio.h>

void increment(int \*x);

int main()

{

int \*p, a;

printf("Enter a Number: ");

scanf("%d", &a);

p = &a;

printf("Value before increment: %d\n", a);

increment(p);

printf("Value after increment: %d\n", a);

return 0;

}

void increment(int \*x)

{

(\*x)++;

}

1. **Develop a C program that uses call by reference to find the maximum of two numbers.**

#include <stdio.h>

void max(int \*a, int \*b);

int main()

{

int x, y;

printf("Enter two Numbers: ");

scanf("%d %d", &x, &y);

max(&x, &y);

return 0;

}

void max(int \*a, int \*b)

{

if (\*a > \*b)

{

printf("Maximum value is %d", \*a);

}

else if (\*b > \*a)

{

printf("Maximum value is %d", \*b);

}

else

{

printf("Both the Numbers are same");

}

}

1. **Design a function that takes three integers as arguments and sorts them in ascending order using call by reference.**

#include <stdio.h>

void sort(int \*x, int \*y, int \*z);

int main()

{

int a, b, c;

printf("Enter three Numbers: ");

scanf("%d %d %d", &a, &b, &c);

sort(&a, &b, &c);

printf("The sorted Numbers are: %d %d %d", a, b, c);

return 0;

}

void sort(int \*x, int \*y, int \*z)

{

int temp;

if (\*x > \*y)

{

temp = \*x;

\*x = \*y;

\*y = temp;

}

if (\*x > \*z)

{

temp = \*x;

\*x = \*z;

\*z = temp;

}

if (\*y > \*z)

{

temp = \*y;

\*y = \*z;

\*z = temp;

}

}

1. **Create a C program that uses call by reference to calculate the area and perimeter of a rectangle.**

#include <stdio.h>

void perimeter(int \*x, int \*y, int \*perimeter);

void area(int \*a, int \*b, int \*area);

int main()

{

int l, b, result;

printf("Enter the Length & Breadth of a Rectangle: ");

scanf("%d %d", &l, &b);

perimeter(&l, &b, &result);

printf("The Perimeter of the Rectangle is %d\n", result);

area(&l, &b, &result);

printf("The Area of the Rectangle is %d\n", result);

}

void perimeter(int \*x, int \*y, int \*perimeter)

{

\*perimeter = 2 \* ((\*x) + (\*y));

}

void area(int \*a, int \*b, int \*area)

{

\*area = (\*a) \* (\*b);

}

1. **Write a function that takes a pointer to a character as an argument and converts it to uppercase using call by reference.**

#include <stdio.h>

void upperCase(char \*x);

int main()

{

char a;

printf("Enter a lower case Character: ");

scanf("%c", &a);

upperCase(&a);

printf("Upper Case Character: %c", a);

return 0;

}

void upperCase(char \*x)

{

if (\*x >= 'a' && \*x <= 'z')

{

\*x = \*x - 32;

}

}