

1- Program to Declare a Variable and a Pointer:

برنامج للإعلان عن متغير و Pointer:

Output

```
Value of num: 5
Value of num using pointer: 5
```

Solution

```
// www.gammal.tech
#include <stdio.h>

int main() {
    int num = 5;
    int *ptr = &num;

    printf("Value of num: %d\n", num);
    printf("Value of num using pointer: %d\n", *ptr);

    return 0;
}
```

2- Program to Swap Two Numbers Using Pointers:

برنامج لتبديل رقمين باستخدام Pointers:

Output

```
Before swapping: x = 5, y = 10
After swapping: x = 10, y = 5
```

Solution

```

// www.gammal.tech
#include <stdio.h>

void swap(int *a, int *b) {
    int temp = *a;
    *a = *b;
    *b = temp;
}

int main() {
    int x = 5, y = 10;

    printf("Before swapping: x = %d, y = %d\n", x, y);

    swap(&x, &y);

    printf("After swapping: x = %d, y = %d\n", x, y);

    return 0;
}
```

3- Program to Find the Sum of Two Numbers Using Pointers:

برنامج لإيجاد مجموع رقمين باستخدام Pointers:

Input

```
Enter the first number: 5
Enter the second number: 6
```

Output

```
Sum: 11
```

Solution

```

// www.gammal.tech
#include <stdio.h>

int main() {
    int num1, num2, sum;
    int *ptr1, *ptr2;

    printf("Enter the first number: ");
    scanf("%d", &num1);

    printf("Enter the second number: ");
    scanf("%d", &num2);

    ptr1 = &num1;
    ptr2 = &num2;

    // Sum calculation using pointers
    sum = *ptr1 + *ptr2;

    printf("Sum: %d\n", sum);

    return 0;
}
```

4- Program to Calculate Area of a Rectangle Using Pointers:

برنامج لحساب مساحة المستطيل باستخدام Pointers:

Input

```
Enter the length of the rectangle: 5
Enter the width of the rectangle: 6
```

Output

```
Area of the rectangle: 30.00
```

Solution

```

// www.gammal.tech
#include <stdio.h>

int main() {
    float length, width, area;
    float *ptrLength, *ptrWidth;

    printf("Enter the length of the rectangle: ");
    scanf("%f", &length);

    printf("Enter the width of the rectangle: ");
    scanf("%f", &width);

    ptrLength = &length;
    ptrWidth = &width;

    // Area calculation using pointers
    area = *ptrLength * *ptrWidth;

    printf("Area of the rectangle: %.2f\n", area);

    return 0;
}
```

5- Program to Swap Two Numbers Using Pointers:

برنامج لتبديل رقمين باستخدام Pointers:

Input

```
Enter the first number: 5
Enter the second number: 9
```

Output

```
After swapping:
First number: 9
Second number: 5
```

Solution

```
// www.gammal.tech
#include <stdio.h>

int main() {
    int num1, num2, temp;
    int *ptr1, *ptr2;

    printf("Enter the first number: ");
    scanf("%d", &num1);

    printf("Enter the second number: ");
    scanf("%d", &num2);

    ptr1 = &num1;
    ptr2 = &num2;

    // Swapping using pointers
    temp = *ptr1;
    *ptr1 = *ptr2;
    *ptr2 = temp;

    printf("After swapping:\n");
    printf("First number: %d\n", num1);
    printf("Second number: %d\n", num2);

    return 0;
}
```

6- Program to Find the Maximum of Two Numbers using Pointers:

برنامج للعثور على الرقم الأكبر لعددتين باستخدام Pointers:

Input

```
Enter two numbers: 5 6
```

Output

```
Maximum: 6
```

Solution

```
// www.gammal.tech
#include <stdio.h>

int main() {
    int x, y, *ptrX, *ptrY;

    printf("Enter two numbers: ");
    scanf("%d %d", &x, &y);

    ptrX = &x;
    ptrY = &y;

    if (*ptrX > *ptrY) {
        printf("Maximum: %d\n", *ptrX);
    } else {
        printf("Maximum: %d\n", *ptrY);
    }

    return 0;
}
```

7- Program to Check if a Number is Even or Odd using Pointers:

برنامج للتحقق مما إذا كان الرقم زوجيًا أو فرديًا باستخدام Pointers:

Input

```
Enter a number: 5
```

Output

```
Odd
```

Solution

```
// www.gammal.tech
#include <stdio.h>

int main() {
    int num, *ptrNum;

    printf("Enter a number: ");
    scanf("%d", &num);

    ptrNum = &num;

    if (*ptrNum % 2 == 0) {
        printf("Even\n");
    } else {
        printf("Odd\n");
    }

    return 0;
}
```

8- Program to Calculate the Sum of Two Numbers using Pointers:

برنامج لحساب مجموع رقمين باستخدام Pointers:

Input

```
Enter two numbers: 5 7
```

Output

```
Sum of 5 and 7 is: 12
```

Solution

```

// www.gammal.tech
#include <stdio.h>

void addNumbers(int *a, int *b, int *sum) {
    *sum = *a + *b;
}

int main() {
    int num1, num2, result;

    printf("Enter two numbers: ");
    scanf("%d %d", &num1, &num2);

    // Pass addresses of num1, num2, and result to the addNumbers function
    addNumbers(&num1, &num2, &result);

    printf("Sum of %d and %d is: %d\n", num1, num2, result);

    return 0;
}
```

9- Program to Swap Two Characters using Pointers:

برنامج لتبديل حرفين باستخدام Pointers:

Input

```
Enter two characters: a c
```

Output

```
After swapping: char1 = c, char2 = a
```


Solution

```

// www.gammal.tech
#include <stdio.h>

void swapChars(char *a, char *b) {
    char temp = *a;
    *a = *b;
    *b = temp;
}

int main() {
    char char1, char2;

    printf("Enter two characters: ");
    scanf(" %c %c", &char1, &char2);

    // Pass addresses of char1 and char2 to the swapChars function
    swapChars(&char1, &char2);

    printf("After swapping: char1 = %c, char2 = %c\n", char1, char2);

    return 0;
}
```

10- Program to Increment a Number using Pointers:

برنامج لزيادة رقم باستخدام Pointers:


Input

```
Enter a number: 5
```

Output

```
After incrementing: 6
```

Solution



```
// www.gammal.tech
#include <stdio.h>

void increment(int *num) {
    (*num)++;
}

int main() {
    int number;

    printf("Enter a number: ");
    scanf("%d", &number);

    // Pass the address of number to the increment function
    increment(&number);

    printf("After incrementing: %d\n", number);

    return 0;
}
```
