PRACTICAL:5

1. Write a program to demonstrate file inclusion using #include user's own header file.

1. **myheader.h** (Custom Header File)

```
#ifndef MYHEADER_H
#define MYHEADER_H

// Function prototype
int add(int a, int b);

#endif
```

2. **myheader.c** (Header File Implementation)

```
#include "myheader.h"

// Function definition
int add(int a, int b) {
    return a + b;
}
```

3. **main.c** (Main Program)

```
#include <stdio.h>
#include "myheader.h" // Including the custom header file

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

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

    // Calling the function from the custom header file
    sum = add(num1, num2);

    printf("The sum of %d and %d is %d\n", num1, num2, sum);
```

```
    return 0;
}
```

OUTPUT:

```
Enter two numbers: 5 10
The sum of 5 and 10 is 15
```

2. Define a macro for a constant value and use it to calculate the perimeter of a rectangle.

CODE:

```
#include <stdio.h>
// Define a macro for a constant value (2 for the perimeter formula)
#define MULTIPLIER 2
int main() {
    int length, width, perimeter;
    // Input the length and width of the rectangle
    printf("Enter the length of the rectangle: ");
    scanf("%d", &length);
    printf("Enter the width of the rectangle: ");
    scanf("%d", &width);
    // Calculate the perimeter using the macro
    perimeter = MULTIPLIER * (length + width);
    // Output the result
    printf("The perimeter of the rectangle is: %d\n", perimeter);
    return 0;
}
```

OUTPUT:

```
Output

Enter the length of the rectangle: 3
Enter the width of the rectangle: 2
The perimeter of the rectangle is: 10


=== Code Execution Successful ===
```

3. Write a program to calculate the square of a number using a macro.

CODE:

```
#include <stdio.h>
// Define a macro to calculate the square of a number
#define SQUARE(x) ((x) * (x))

int main() {
    int number, result;

    // Input the number
    printf("Enter a number: ");
    scanf("%d", &number);
    // Calculate the square using the macro
    result = SQUARE(number);
    // Output the result
    printf("The square of %d is: %d\n", number, result);
    return 0;
}
```

OUTPUT:

```
Output

Enter a number: 2
The square of 2 is: 4


=== Code Execution Successful ===
```

4. Write a program to include different code sections based on a macro value.

CODE:

```
#include <stdio.h>
// Define a macro to control the code sections
#define MODE 1  // Change this value to 0 or 1 to include different code sections
int main() {
    #if MODE == 1
        // Code section for MODE 1
        printf("MODE is set to 1: Executing code for MODE 1.\n");
        printf("This section performs Task A.\n");
    #elif MODE == 0
        // Code section for MODE 0
        printf("MODE is set to 0: Executing code for MODE 0.\n");
        printf("This section performs Task B.\n");
    #else
        // Code section for invalid MODE
        printf("Invalid MODE value. Please set MODE to 0 or 1.\n");
    #endif
    return 0;
}
```

OUTPUT:

Output

```
MODE is set to 1: Executing code for MODE 1.
This section performs Task A.


=== Code Execution Successful ===
```