C++ Exercises

1. Write a program that declares an integer variable and assigns it a value of 10. Then, output the value of the variable to the console.
2. Write a program that declares two integer variables and assigns them values. Then, swap the values of the variables and output their new values to the console.
3. Write a program that prompts the user to enter an integer and outputs its square to the console.
4. Write a program that calculates the area of a rectangle given its length and width. Prompt the user to enter the length and width, and output the area to the console.
5. Write a program that prompts the user to enter two integers and outputs their sum, difference, product, and quotient to the console.
6. Declare two variables called width and height of type double and assign them values of 4.5 and 2.5, respectively. Calculate the area of a rectangle with these dimensions and store the result in a variable called area. Print the value of area to the console.
7. Declare a variable called radius of type double and prompt the user to enter the radius of a circle. Store the user's input in the radius variable. Calculate the area of the circle and store the result in a variable called area. Print the value of area to the console.
8. Declare a variable called num of type int and assign it a value of 10. Use the pre-increment operator to increment the value of num by 1 and store the result back in num. Print the value of num to the console.
9. Declare two variables called num1 and num2 of type int and prompt the user to enter two integers. Store the user's input in the num1 and num2 variables. Swap the values of num1 and num2 without using a temporary variable. Print the values of num1 and num2 to the console.
10. Declare a variable called num of type int and assign it a value of 15. Declare a pointer called p that points to the address of num. Change the value of num using the pointer p. Print the value of num to the console.

C++ Exercises and Solution

1. Write a program that declares an integer variable and assigns it a value of 10. Then, output the value of the variable to the console.

```cpp
#include <iostream>
int main() {
 int num = 10;
 std::cout << "The value of num is: " << num << std::endl;
 return 0; }
```

2. Write a program that declares two integer variables and assigns them values. Then, swap the values of the variables and output their new values to the console.

```cpp
#include <iostream>
int main() {
 int num1 = 10;
 int num2 = 20;
 int temp;
 std::cout << "Before swapping, num1 = " << num1 << " and num2 = " << num2 << std::endl;
 temp = num1;
 num1 = num2;
```

```cpp
    num2 = temp;

    std::cout << "After swapping, num1 = " << num1 << " and num2 = " << num2 << std::endl;

    return 0; }
```

3. Write a program that prompts the user to enter an integer and outputs its square to the console.

```cpp
#include <iostream>

int main() {

    int num;

    std::cout << "Enter an integer: ";

    std::cin >> num;

    int square = num * num;

    std::cout << "The square of " << num << " is " << square << std::endl;

    return 0; }
```

4. Write a program that calculates the area of a rectangle given its length and width. Prompt the user to enter the length and width, and output the area to the console.

```cpp
#include <iostream>

int main() {

    double length, width;

    std::cout << "Enter the length of the rectangle: ";

    std::cin >> length;

    std::cout << "Enter the width of the rectangle: ";

    std::cin >> width;

    double area = length * width;

    std::cout << "The area of the rectangle is " << area << std::endl;

    return 0;}
```

5. Write a program that prompts the user to enter two integers and outputs their sum, difference, product, and quotient to the console.

```cpp
#include <iostream>

int main() {

    int num1, num2;

    std::cout << "Enter the first integer: ";

    std::cin >> num1;
```

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```cpp
    std::cout << "Enter the second integer: ";

    std::cin >> num2;

    int sum = num1 + num2;

    int diff = num1 - num2;

    int prod = num1 * num2;

    double quot = static_cast<double>(num1) / num2;

    std::cout << "The sum is " << sum << std::endl;

    std::cout << "The difference is " << diff << std::endl;

    std::cout << "The product is " << prod << std::endl;

    std::cout << "The quotient is " << quot << std::endl;

    return 0;}
```

6. Declare two variables called width and height of type double and assign them values of 4.5 and 2.5, respectively. Calculate the area of a rectangle with these dimensions and store the result in a variable called area. Print the value of area to the console.

```cpp
#include <iostream>

int main() {

    double width = 4.5;

    double height = 2.5;

    double area = width * height;

    std::cout << "Area: " << area << std::endl;

    return 0; }
```

7. Declare a variable called radius of type double and prompt the user to enter the radius of a circle. Store the user's input in the radius variable. Calculate the area of the circle and store the result in a variable called area. Print the value of area to the console.

```cpp
#include <iostream>

int main() {

    double radius;

    std::cout << "Enter radius: ";

    std::cin >> radius;

    double area = 3.14159 * radius * radius;

    std::cout << "Area: " << area << std::endl;

    return 0;}
```

8. Declare a variable called num of type int and assign it a value of 10. Use the pre-increment operator to increment the value of num by 1 and store the result back in num. Print the value of num to the console.

```cpp
#include <iostream>

int main() {

 int num = 10;

 ++num;

 std::cout << "Num: " << num << std::endl;

 return 0; }
```

9. Declare two variables called num1 and num2 of type int and prompt the user to enter two integers. Store the user's input in the num1 and num2 variables. Swap the values of num1 and num2 without using a temporary variable. Print the values of num1 and num2 to the console.

```cpp
#include <iostream>

int main() {

 int num1, num2;

 std::cout << "Enter two integers: ";

 std::cin >> num1 >> num2;

 num1 = num1 + num2;

 num2 = num1 - num2;

 num1 = num1 - num2;

 std::cout << "Num1: " << num1 << std::endl;

 std::cout << "Num2: " << num2 << std::endl;

 return 0;}
```

10. Declare a variable called num of type int and assign it a value of 15. Declare a pointer called p that points to the address of num. Change the value of num using the pointer p. Print the value of num to the console.

```cpp
#include <iostream>

int main() { int num = 15;

 int* p = &num;

 *p = 20;

 std::cout << "Num: " << num << std::endl;

 return 0; }
```