C++ Exercises

1. Write a program that prompts the user to enter an integer and checks whether it is positive or negative. If the integer is positive, the program should print "The number is positive." If the integer is negative, the program should print "The number is negative."
2. Write a program that prompts the user to enter their age and checks whether they are old enough to vote. If the user is 18 or older, the program should print "You are old enough to vote." If the user is younger than 18, the program should print "You are not old enough to vote."
3. Write a program that prompts the user to enter a year and checks whether it is a leap year. If the year is divisible by 4 but not by 100, or if it is divisible by 400, the program should print "The year is a leap year." Otherwise, the program should print "The year is not a leap year."
4. Write a program that prompts the user to enter three integers and checks whether they are all equal. If all three integers are equal, the program should print "All the numbers are equal." Otherwise, the program should print "The numbers are not all equal."
5. Write a program that prompts the user to enter a letter and checks whether it is a vowel or a consonant. If the letter is a vowel (a, e, i, o, u), the program should print "The letter is a vowel." If the letter is a consonant, the program should print "The letter is a consonant."
6. Write a program that prompts the user to enter two integers and checks whether they are equal. If they are equal, the program should print "The two numbers are equal." If they are not equal, the program should print "The two numbers are not equal."
7. Write a program that prompts the user to enter an integer and checks whether it is even or odd. If the number is even, the program should print "The number is even." If the number is odd, the program should print "The number is odd."
8. Write a program that prompts the user to enter three integers and finds the largest of the three. Print the largest number to the console.
9. Write a program that prompts the user to enter a number and checks whether it is positive, negative, or zero. If the number is positive, the program should print "The number is positive." If the number is negative, the program should print "The number is negative." If the number is zero, the program should print "The number is zero."
10. Write a program that prompts the user to enter a letter and checks whether it is a vowel, a consonant, or a non-alphabetic character. If the letter is a vowel, the program should print "The letter is a vowel." If the letter is a consonant, the program should print "The letter is a consonant." If the letter is not alphabetic, the program should print "The input is not a letter."

C++ Exercises and Solution

1. Write a program that prompts the user to enter an integer and checks whether it is positive or negative. If the integer is positive, the program should print "The number is positive." If the integer is negative, the program should print "The number is negative."

```
#include <iostream>

using namespace std;

int main() {

   int num;

   cout << "Enter an integer: ";

   cin >> num;

   if (num > 0) {

      cout << "The number is positive.";

   } else {

      cout << "The number is negative."; }

   return 0}
```

2. Write a program that prompts the user to enter their age and checks whether they are old enough to vote. If the user is 18 or older, the program should print "You are old enough to vote." If the user is younger than 18, the program should print "You are not old enough to vote."

```
#include <iostream>
```

```
using namespace std;
int main() {
   int age;
   cout << "Enter your age: ";
   cin >> age;
   if (age >= 18) {
      cout << "You are old enough to vote.";
   } else {
      cout << "You are not old enough to vote."; }
   return 0;}
```

3. Write a program that prompts the user to enter a year and checks whether it is a leap year. If the year is divisible by 4 but not by 100, or if it is divisible by 400, the program should print "The year is a leap year." Otherwise, the program should print "The year is not a leap year."

```
#include <iostream>
using namespace std;
int main() {
   int year;
   cout << "Enter a year: ";
   cin >> year;
   if ((year % 4 == 0 && year % 100 != 0) || year % 400 == 0) {
      cout << "The year is a leap year.";
   } else {
      cout << "The year is not a leap year.";}
   return 0;}
```

4. Write a program that prompts the user to enter three integers and checks whether they are all equal. If all three integers are equal, the program should print "All the numbers are equal." Otherwise, the program should print "The numbers are not all equal."

```
#include <iostream>
using namespace std;
int main() {
   int num1, num2, num3;
   cout << "Enter three integers: ";
```

```
    cin >> num1 >> num2 >> num3;
    if (num1 == num2 && num2 == num3) {
       cout << "All the numbers are equal.";
    } else {
       cout << "The numbers are not all equal.";}
    return 0;}
```

5. Write a program that prompts the user to enter a letter and checks whether it is a vowel or a consonant. If the letter is a vowel (a, e, i, o, u), the program should print "The letter is a vowel." If the letter is a consonant, the program should print "The letter is a consonant."

```
#include <iostream>
using namespace std;
int main() {
    char letter;
    cout << "Enter a letter: ";
    cin >> letter;
    if (letter == 'a' || letter == 'e' || letter == 'i' || letter == 'o' || letter == 'u' ||
       letter == 'A' || letter == 'E' || letter == 'I' || letter == 'O' || letter == 'U') {
       cout << "The letter is a vowel." << endl;
    } else {
       cout << "The letter is a consonant." << endl;  }
    return 0;}
```

6. Write a program that prompts the user to enter two integers and checks whether they are equal. If they are equal, the program should print "The two numbers are equal." If they are not equal, the program should print "The two numbers are not equal."

```
#include <iostream>
using namespace std;
int main() {
    int num1, num2;
    cout << "Enter the first number: ";
    cin >> num1;
    cout << "Enter the second number: ";
    cin >> num2;
```

```
    if (num1 == num2) {
        cout << "The two numbers are equal." << endl;
    } else {
        cout << "The two numbers are not equal." << endl;
    }
    return 0;}
```

7. Write a program that prompts the user to enter an integer and checks whether it is even or odd. If the number is even, the program should print "The number is even." If the number is odd, the program should print "The number is odd."

```
#include <iostream>
using namespace std;
int main() {
    int num;
    cout << "Enter a number: ";
    cin >> num;
    if (num % 2 == 0) {
        cout << "The number is even." << endl;
    } else {
        cout << "The number is odd." << endl;
    }
    return 0;}
```

8. Write a program that prompts the user to enter three integers and finds the largest of the three. Print the largest number to the console.

```
#include <iostream>
using namespace std;
int main() {
    int num1, num2, num3, largest;
    cout << "Enter the first number: ";
    cin >> num1;
    cout << "Enter the second number: ";
    cin >> num2;
    cout << "Enter the third number: ";
```

```
    cin >> num3;
    if (num1 >= num2 && num1 >= num3) {
        largest = num1;
    } else if (num2 >= num1 && num2 >= num3) {
        largest = num2;
    } else {
        largest = num3;
    }
    cout << "The largest number is: " << largest << endl;
    return 0;}
```

9. Write a program that prompts the user to enter a number and checks whether it is positive, negative, or zero. If the number is positive, the program should print "The number is positive." If the number is negative, the program should print "The number is negative." If the number is zero, the program should print "The number is zero."

```
#include <iostream>
using namespace std;
int main() {
    int num;
    cout << "Enter a number: ";
    cin >> num;
    if (num > 0) {
        cout << "The number is positive." << endl;
    } else if (num < 0) {
        cout << "The number is negative." << endl;
    } else {
        cout << "The number is zero." << endl;
    }
    return 0;}
```

10. Write a program that prompts the user to enter a letter and checks whether it is a vowel, a consonant, or a non-alphabetic character. If the letter is a vowel, the program should print "The letter is a vowel." If the letter is a consonant, the program should print "The letter is a consonant." If the letter is not alphabetic, the program should print "The input is not a letter."

```
#include <iostream>
using namespace std;
int main() {
   char letter;
   cout << "Enter a letter: ";
   cin >> letter;
   if (letter >= 'A' && letter <= 'Z') {
      letter = letter + 32;}
   if (letter >= 'a' && letter <= 'z') {
      if (letter == 'a' || letter == 'e' || letter == 'i' || letter == 'o' || letter == 'u') {
         cout << "The letter is a vowel." << endl;
      } else {
         cout << "The letter is a consonant." << endl;
      }
   } else {
      cout << "The input is not a letter." << endl;
   }
   return 0;}
```