write program in c++ class-object concept perfectional way prime number or not

2/2

**ChatGPT said:**

Here is a **professional C++ program using class and object concepts** to check whether a number is a **prime number or not**. This version follows **good coding practices** including encapsulation, proper naming conventions, and separation of logic.

**✅ C++ Program (Professional Way – OOP Approach)**

cpp

CopyEdit

#include <iostream>

using namespace std;

// Class to check for prime number

class PrimeChecker {

private:

int number;

// Helper function to check if the number is prime

bool isPrime(int n) {

if (n <= 1) return false;

if (n == 2) return true;

if (n % 2 == 0) return false;

for (int i = 3; i \* i <= n; i += 2) {

if (n % i == 0)

return false;

}

return true;

}

public:

// Constructor to initialize the number

PrimeChecker(int num) {

number = num;

}

// Public function to display result

void checkAndDisplay() {

if (isPrime(number)) {

cout << number << " is a Prime Number." << endl;

} else {

cout << number << " is Not a Prime Number." << endl;

}

}

};

// Main function

int main() {

int inputNumber;

cout << "Enter a number to check if it is prime: ";

cin >> inputNumber;

// Creating object of PrimeChecker

PrimeChecker checker(inputNumber);

checker.checkAndDisplay();

return 0;

}

**📌 Output Example:**

pgsql

CopyEdit

Enter a number to check if it is prime: 13

13 is a Prime Number.

**🧠 Key Concepts Used:**

* **Encapsulation**: All logic is encapsulated in the class.
* **Constructor**: Initializes the object with a value.
* **Private helper function**: Keeps internal logic hidden from outside.
* **Good naming conventions**: Improves readability and maintainability.

Let me know if you want:

* This program using **multiple classes**
* A version that checks **a range of prime numbers**
* Or a similar program using **file I/O or GUI (C++/Qt)**.

**You said:**

provide more this type codeing quest and answanr for code exam which importan asked job

**ChatGPT said:**

Sure Tanmay! Here's a **set of important C++ coding questions and professional solutions using class-object (OOP) concepts** — especially useful for job interviews or coding exams.

**✅ 1. Prime Number Check**

🔹 **Already provided above**

**✅ 2. Palindrome Number Check Using Class**

cpp

CopyEdit

#include <iostream>

using namespace std;

class PalindromeChecker {

private:

int number;

int reverseNumber(int n) {

int reversed = 0;

while (n != 0) {

reversed = reversed \* 10 + n % 10;

n /= 10;

}

return reversed;

}

public:

PalindromeChecker(int num) : number(num) {}

void checkPalindrome() {

if (number == reverseNumber(number)) {

cout << number << " is a Palindrome Number." << endl;

} else {

cout << number << " is Not a Palindrome Number." << endl;

}

}

};

int main() {

int input;

cout << "Enter a number: ";

cin >> input;

PalindromeChecker obj(input);

obj.checkPalindrome();

return 0;

}

**✅ 3. Armstrong Number Check**

cpp

CopyEdit

#include <iostream>

#include <cmath>

using namespace std;

class ArmstrongChecker {

private:

int number;

public:

ArmstrongChecker(int num) : number(num) {}

void checkArmstrong() {

int original = number, sum = 0, digits = 0;

int temp = number;

// Count digits

while (temp != 0) {

digits++;

temp /= 10;

}

temp = number;

while (temp != 0) {

sum += pow(temp % 10, digits);

temp /= 10;

}

if (sum == original)

cout << number << " is an Armstrong Number." << endl;

else

cout << number << " is Not an Armstrong Number." << endl;

}

};

int main() {

int num;

cout << "Enter a number: ";

cin >> num;

ArmstrongChecker checker(num);

checker.checkArmstrong();

return 0;

}

**✅ 4. Factorial Using Class**

cpp

CopyEdit

#include <iostream>

using namespace std;

class FactorialCalculator {

private:

int number;

public:

FactorialCalculator(int n) : number(n) {}

long long calculate() {

long long fact = 1;

for (int i = 1; i <= number; i++)

fact \*= i;

return fact;

}

void displayFactorial() {

cout << "Factorial of " << number << " is: " << calculate() << endl;

}

};

int main() {

int num;

cout << "Enter a number: ";

cin >> num;

FactorialCalculator obj(num);

obj.displayFactorial();

return 0;

}

**✅ 5. Fibonacci Series Using Class**

cpp

CopyEdit

#include <iostream>

using namespace std;

class FibonacciSeries {

private:

int terms;

public:

FibonacciSeries(int n) : terms(n) {}

void generateSeries() {

int a = 0, b = 1, next;

cout << "Fibonacci Series: ";

for (int i = 1; i <= terms; ++i) {

cout << a << " ";

next = a + b;

a = b;

b = next;

}

cout << endl;

}

};

int main() {

int n;

cout << "Enter number of terms: ";

cin >> n;

FibonacciSeries fib(n);

fib.generateSeries();

return 0;

}

**📘 Bonus: Tips for Interview (OOP Questions)**

* ✅ Use **constructors** to initialize values.
* ✅ Keep logic in **private** helper methods.
* ✅ Create **modular, testable** functions.
* ✅ Use proper **indentation and comments**.
* ✅ Practice **edge cases** (0, 1, negative numbers).

**❓ Want More?**

I can provide:

* 💼 **File Handling** programs using class.
* 🎯 Sorting/Searching using OOP.
* 🧠 Pattern printing using class.
* 💻 Mini project (Banking System, Student Record, etc.) using class.

Would you like a **PDF cheat sheet** or want me to prepare more **job-level questions** like this with expected outputs?

**You said:**

yes

**ChatGPT said:**

Great, Tanmay! Here's a set of **high-demand C++ coding questions with class-object (OOP) solutions** that are frequently asked in coding tests and interviews. I'll also prepare a **PDF cheat sheet** for download afterward if you'd like.

**🔥 TOP C++ CLASS-OBJECT PROGRAMS FOR JOB CODING TEST**

**✅ 6. Even or Odd Number Using Class**

cpp

CopyEdit

#include <iostream>

using namespace std;

class EvenOddChecker {

private:

int number;

public:

EvenOddChecker(int num) : number(num) {}

void checkEvenOdd() {

if (number % 2 == 0)

cout << number << " is Even." << endl;

else

cout << number << " is Odd." << endl;

}

};

int main() {

int num;

cout << "Enter a number: ";

cin >> num;

EvenOddChecker obj(num);

obj.checkEvenOdd();

return 0;

}

**✅ 7. Sum of Digits Using Class**

#include <iostream>

using namespace std;

class DigitSummer {

private:

int number;

public:

DigitSummer(int num) : number(num) {}

int calculateSum() {

int sum = 0, n = number;

while (n > 0) {

sum += n % 10;

n /= 10;

}

return sum;

}

void displaySum() {

cout << "Sum of digits of " << number << " is: " << calculateSum() << endl;

}

};

int main() {

int num;

cout << "Enter a number: ";

cin >> num;

DigitSummer obj(num);

obj.displaySum();

return 0;

}

**✅ 8. Reverse a Number Using Class**

cpp

CopyEdit

#include <iostream>

using namespace std;

class NumberReverser {

private:

int number;

public:

NumberReverser(int n) : number(n) {}

int reverse() {

int rev = 0, temp = number;

while (temp != 0) {

rev = rev \* 10 + temp % 10;

temp /= 10;

}

return rev;

}

void displayReverse() {

cout << "Reversed Number: " << reverse() << endl;

}

};

int main() {

int num;

cout << "Enter a number: ";

cin >> num;

NumberReverser obj(num);

obj.displayReverse();

return 0;

}

**✅ 9. Find Largest of Three Numbers Using Class**

#include <iostream>

using namespace std;

class LargestFinder {

private:

int a, b, c;

public:

LargestFinder(int x, int y, int z) : a(x), b(y), c(z) {}

int findLargest() {

return (a > b && a > c) ? a : (b > c ? b : c);

}

void displayLargest() {

cout << "The largest number is: " << findLargest() << endl;

}

};

int main() {

int x, y, z;

cout << "Enter 3 numbers: ";

cin >> x >> y >> z;

LargestFinder obj(x, y, z);

obj.displayLargest();

return 0;

}

**✅ 10. Simple Interest Using Class**

cpp

CopyEdit

#include <iostream>

using namespace std;

class InterestCalculator {

private:

float principal, rate, time;

public:

InterestCalculator(float p, float r, float t) : principal(p), rate(r), time(t) {}

float calculateInterest() {

return (principal \* rate \* time) / 100;

}

void displayInterest() {

cout << "Simple Interest is: " << calculateInterest() << endl;

}

};

int main() {

float p, r, t;

cout << "Enter Principal, Rate, and Time: ";

cin >> p >> r >> t;

InterestCalculator obj(p, r, t);

obj.displayInterest();

return 0;

}

**📁 What's Next?**

I will prepare:

* ✅ A downloadable **PDF cheat sheet** with these 10 C++ programs
* ✅ Bonus: Important **OOP interview questions** (theory + MCQ)
* ✅ Bonus: **Mini Project ideas using class-object**
* ✅ Bonus: Shortcut memory tricks for logic building

Would you like:

1. A **PDF download now**?
2. Or shall I add 5 more programs (like pattern printing, file handling, student mark sheet) and then make a full PDF?

Let me know your preference 👇

**You said:**

2

**ChatGPT said:**

Perfect, Tanmay! ✅  
I'll now give you **5 more important C++ programs using class-object** (commonly asked in coding tests), and then prepare a **single professional PDF** with:

* ✔️ 15 C++ programs with clean OOP code
* ✔️ Output examples
* ✔️ Quick logic explanations
* ✔️ Job-useful notes

**🔥 5 More C++ Class/Object Programs**

**✅ 11. Check Leap Year Using Class**

cpp

CopyEdit

#include <iostream>

using namespace std;

class LeapYearChecker {

private:

int year;

public:

LeapYearChecker(int y) : year(y) {}

void checkLeapYear() {

if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0))

cout << year << " is a Leap Year." << endl;

else

cout << year << " is Not a Leap Year." << endl;

}

};

int main() {

int y;

cout << "Enter year: ";

cin >> y;

LeapYearChecker obj(y);

obj.checkLeapYear();

return 0;

}

**✅ 12. Swap Two Numbers Using Class**

cpp

CopyEdit

#include <iostream>

using namespace std;

class NumberSwapper {

private:

int a, b;

public:

NumberSwapper(int x, int y) : a(x), b(y) {}

void swapNumbers() {

int temp = a;

a = b;

b = temp;

}

void display() {

cout << "After Swapping: a = " << a << ", b = " << b << endl;

}

};

int main() {

int x, y;

cout << "Enter two numbers: ";

cin >> x >> y;

NumberSwapper obj(x, y);

obj.swapNumbers();

obj.display();

return 0;

}

**✅ 13. Pattern Printing (Right Triangle) Using Class**

#include <iostream>

using namespace std;

class PatternPrinter {

private:

int rows;

public:

PatternPrinter(int r) : rows(r) {}

void printPattern() {

for (int i = 1; i <= rows; ++i) {

for (int j = 1; j <= i; ++j)

cout << "\* ";

cout << endl;

}

}

};

int main() {

int n;

cout << "Enter number of rows: ";

cin >> n;

PatternPrinter obj(n);

obj.printPattern();

return 0;

}

**✅ 14. Student Marks Sheet (Class with Input & Display)**

cpp

CopyEdit

#include <iostream>

using namespace std;

class Student {

private:

string name;

int roll;

float marks1, marks2, marks3;

public:

void inputDetails() {

cout << "Enter name, roll, marks in 3 subjects: ";

cin >> name >> roll >> marks1 >> marks2 >> marks3;

}

void displayDetails() {

float total = marks1 + marks2 + marks3;

float avg = total / 3;

cout << "\nStudent Name: " << name << "\nRoll: " << roll;

cout << "\nTotal Marks: " << total << "\nAverage: " << avg << endl;

}

};

int main() {

Student s1;

s1.inputDetails();

s1.displayDetails();

return 0;

}

**✅ 15. File Handling Using Class (Write & Read Student Data)**

cpp

CopyEdit

#include <iostream>

#include <fstream>

using namespace std;

class FileStudent {

private:

string name;

int age;

public:

void getData() {

cout << "Enter name and age: ";

cin >> name >> age;

}

void writeToFile() {

ofstream file("student.txt");

file << name << " " << age << endl;

file.close();

}

void readFromFile() {

ifstream file("student.txt");

file >> name >> age;

file.close();

cout << "Read from file:\nName: " << name << ", Age: " << age << endl;

}

};

int main() {

FileStudent s;

s.getData();

s.writeToFile();

s.readFromFile();

return 0;

}

**📝 Now Creating the PDF...**

**✔ PDF will include:**

* 15 full programs
* Clean class-object structure
* Input/output examples
* Bonus cheat notes for job exams

👉 Please wait 1–2 minutes while I generate and upload your PDF.

Shall I continue and upload the PDF now?

**You said:**

yes

**ChatGPT said:**

✅ Your PDF is ready:  
**📘 Download 15 C++ Class-Object Programs Cheat Sheet**

This includes:

* 15 job-relevant C++ programs using class/object
* Clean, professional structure
* Logic explanation for each
* Ideal for coding test or interview prep

Let me know if you'd like:

* A **MCQ/OOP theory PDF**
* A mini **Banking / Student Record System Project** in C++
* Or similar PDFs for **Java**, **Python**, or **MERN stack**

I'm here to help! 💻✨

**You said:**

iimportant OOP interview questions and answare (theory + MCQ)

4/4

**Coding Test Preparation**

**1. Reverse a String**

cpp

CopyEdit

string reverseString(string s) {

reverse(s.begin(), s.end());

return s;

}

**2. Check for Palindrome**

cpp

CopyEdit

bool isPalindrome(string s) {

int i = 0, j = s.length() - 1;

while (i < j) {

if (s[i] != s[j]) return false;

i++; j--;

}

return true;

}

**3. Fibonacci using Recursion**

cpp

CopyEdit

int fibonacci(int n) {

if (n <= 1) return n;

return fibonacci(n-1) + fibonacci(n-2);

}

**4. Find the Largest Element in an Array**

cpp

CopyEdit

int largest(vector<int>& nums) {

return \*max\_element(nums.begin(), nums.end());

}

**5. Swap Two Numbers Without Temp Variable**

cpp

CopyEdit

void swap(int &a, int &b) {

a = a + b;

b = a - b;

a = a - b;

}

Would you like a **printable PDF**, **flashcards**, or **mock coding test** as next steps?

Let me know and I’ll generate them for you.

**You said:**

Write full code with output

**ChatGPT said:**

Sure, Tanmay! Below is a complete C++ program that demonstrates **key concepts** commonly asked in interviews, with **real code**, **comments**, and **expected output**. You can run this in any C++ compiler (like Code::Blocks, Visual Studio, or online platforms like [OnlineGDB](https://www.onlinegdb.com/)).

**Full C++ Code with Output:**

cpp

CopyEdit

#include <iostream>

#include <string>

#include <vector>

#include <algorithm>

using namespace std;

// 1. Struct vs Class

struct Book {

string title;

};

class BankAccount {

int balance;

public:

BankAccount() { balance = 0; }

void deposit(int amount) { balance += amount; }

int getBalance() { return balance; }

};

// 2. Constructor and Destructor

class HotelRoom {

public:

HotelRoom() { cout << "Lights ON (Constructor)\n"; }

~HotelRoom() { cout << "Lights OFF (Destructor)\n"; }

};

// 3. new vs malloc (using new only in C++)

class MemoryDemo {

public:

int\* ptr;

MemoryDemo() {

ptr = new int(10);

cout << "Memory allocated using new: " << \*ptr << "\n";

}

~MemoryDemo() {

delete ptr;

cout << "Memory deallocated\n";

}

};

// 4. Inheritance

class Vehicle {

public:

void start() { cout << "Vehicle Started\n"; }

};

class Car : public Vehicle {

public:

void horn() { cout << "Car Horn\n"; }

};

// 5. Overloading & Overriding

class Printer {

public:

void print(int i) { cout << "Printing int: " << i << "\n"; }

void print(string s) { cout << "Printing string: " << s << "\n"; }

};

class Animal {

public:

virtual void sound() { cout << "Some Animal Sound\n"; }

};

class Dog : public Animal {

public:

void sound() override { cout << "Bark\n"; }

};

// 6. Deep Copy

class MyClass {

int\* data;

public:

MyClass(int val) { data = new int(val); }

MyClass(const MyClass& other) {

data = new int(\*other.data); // Deep copy

}

void show() { cout << "Value: " << \*data << "\n"; }

~MyClass() { delete data; }

};

// 7. Coding Test Examples

string reverseString(string s) {

reverse(s.begin(), s.end());

return s;

}

bool isPalindrome(string s) {

int i = 0, j = s.length() - 1;

while (i < j) {

if (s[i] != s[j]) return false;

i++; j--;

}

return true;

}

int fibonacci(int n) {

if (n <= 1) return n;

return fibonacci(n - 1) + fibonacci(n - 2);

}

int largest(vector<int>& nums) {

return \*max\_element(nums.begin(), nums.end());

}

void swapNumbers(int& a, int& b) {

a = a + b;

b = a - b;

a = a - b;

}

// MAIN FUNCTION

int main() {

cout << "---- Struct vs Class ----\n";

Book b = {"C++ Primer"};

cout << "Book Title: " << b.title << "\n";

BankAccount acc;

acc.deposit(1000);

cout << "Bank Balance: " << acc.getBalance() << "\n";

cout << "\n---- Constructor & Destructor ----\n";

{

HotelRoom room;

}

cout << "\n---- new vs malloc ----\n";

{

MemoryDemo obj;

}

cout << "\n---- Inheritance ----\n";

Car myCar;

myCar.start();

myCar.horn();

cout << "\n---- Overloading ----\n";

Printer p;

p.print(42);

p.print("Hello C++");

cout << "\n---- Overriding ----\n";

Animal\* a = new Dog();

a->sound();

delete a;

cout << "\n---- Deep Copy ----\n";

MyClass obj1(20);

MyClass obj2 = obj1; // Deep copy

obj1.show();

obj2.show();

cout << "\n---- Reverse String ----\n";

string str = "tanmay";

cout << "Original: " << str << "\n";

cout << "Reversed: " << reverseString(str) << "\n";

cout << "\n---- Palindrome Check ----\n";

string pStr = "madam";

cout << pStr << " is palindrome? " << (isPalindrome(pStr) ? "Yes" : "No") << "\n";

cout << "\n---- Fibonacci ----\n";

for (int i = 0; i < 6; i++) {

cout << "Fibonacci(" << i << ") = " << fibonacci(i) << "\n";

}

cout << "\n---- Largest in Array ----\n";

vector<int> arr = {3, 5, 9, 2, 8};

cout << "Largest element: " << largest(arr) << "\n";

cout << "\n---- Swap Two Numbers ----\n";

int x = 10, y = 20;

cout << "Before Swap: x=" << x << ", y=" << y << "\n";

swapNumbers(x, y);

cout << "After Swap: x=" << x << ", y=" << y << "\n";

return 0;

}

**Expected Output:**

pgsql

CopyEdit

---- Struct vs Class ----

Book Title: C++ Primer

Bank Balance: 1000

---- Constructor & Destructor ----

Lights ON (Constructor)

Lights OFF (Destructor)

---- new vs malloc ----

Memory allocated using new: 10

Memory deallocated

---- Inheritance ----

Vehicle Started

Car Horn

---- Overloading ----

Printing int: 42

Printing string: Hello C++

---- Overriding ----

Bark

---- Deep Copy ----

Value: 20

Value: 20

---- Reverse String ----

Original: tanmay

Reversed: yamnat

---- Palindrome Check ----

madam is palindrome? Yes

---- Fibonacci ----

Fibonacci(0) = 0

Fibonacci(1) = 1

Fibonacci(2) = 1

Fibonacci(3) = 2

Fibonacci(4) = 3

Fibonacci(5) = 5

---- Largest in Array ----

Largest element: 9

---- Swap Two Numbers ----

Before Swap: x=10, y=20

After Swap: x=20, y=10

Would you like me to:

**You said:**

More coding question in c++

**ChatGPT said:**

Sure, Tanmay! Here are some **frequently asked C++ coding questions** that are commonly seen in **interviews and coding tests**, with a mix of **easy to intermediate level**:

**1. Check Prime Number**

cpp

CopyEdit

bool isPrime(int n) {

if (n <= 1) return false;

for (int i = 2; i\*i <= n; ++i)

if (n % i == 0) return false;

return true;

}

**2. Factorial Using Recursion**

cpp

CopyEdit

int factorial(int n) {

if (n <= 1) return 1;

return n \* factorial(n - 1);

}

**3. Print Fibonacci Series (Iterative)**

cpp

CopyEdit

void fibonacciSeries(int n) {

int a = 0, b = 1;

cout << a << " " << b << " ";

for (int i = 2; i < n; i++) {

int next = a + b;

cout << next << " ";

a = b;

b = next;

}

}

**4. Count Vowels in a String**

cpp

CopyEdit

int countVowels(string s) {

int count = 0;

for (char c : s) {

c = tolower(c);

if (c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u')

count++;

}

return count;

}

**5. Reverse an Integer**

cpp

CopyEdit

int reverseNumber(int n) {

int rev = 0;

while (n > 0) {

rev = rev \* 10 + n % 10;

n /= 10;

}

return rev;

}

**6. Armstrong Number**

cpp

CopyEdit

bool isArmstrong(int num) {

int sum = 0, original = num, digits = 0;

int temp = num;

while (temp) {

digits++;

temp /= 10;

}

temp = num;

while (temp) {

int d = temp % 10;

sum += pow(d, digits);

temp /= 10;

}

return sum == original;

}

**7. Check Anagram**

cpp

CopyEdit

bool isAnagram(string s1, string s2) {

sort(s1.begin(), s1.end());

sort(s2.begin(), s2.end());

return s1 == s2;

}

**8. Frequency of Characters in a String**

cpp

CopyEdit

void charFrequency(string s) {

unordered\_map<char, int> freq;

for (char c : s)

freq[c]++;

for (auto p : freq)

cout << p.first << ": " << p.second << endl;

}

**9. Find Second Largest Element in Array**

cpp

CopyEdit

int secondLargest(vector<int> arr) {

int first = INT\_MIN, second = INT\_MIN;

for (int num : arr) {

if (num > first) {

second = first;

first = num;

} else if (num > second && num < first) {

second = num;

}

}

return second;

}

**10. Remove Duplicates from String**

cpp

CopyEdit

string removeDuplicates(string s) {

unordered\_set<char> seen;

string result = "";

for (char c : s) {

if (seen.find(c) == seen.end()) {

result += c;

seen.insert(c);

}

}

return result;

}

Would you like full code examples and expected output for each of these in a single file (like before), or only selected ones for your practice test?

**You said:**

Number is palindrome or not?

Number is palindrome or not?

**ChatGPT said:**

Here’s a complete **C++ program to check whether a number is a palindrome or not**, with output and a **real-life example** for better memory:

**What is a Palindrome Number?**

A number is called **palindrome** if it reads the same backward as forward.  
**Example:** 121, 12321, 44444 are palindrome numbers.

**C++ Code:**

cpp

CopyEdit

#include <iostream>

using namespace std;

bool isPalindrome(int num) {

int original = num;

int reversed = 0;

while (num > 0) {

int digit = num % 10;

reversed = reversed \* 10 + digit;

num = num / 10;

}

return original == reversed;

}

int main() {

int number;

cout << "Enter a number: ";

cin >> number;

if (isPalindrome(number))

cout << number << " is a Palindrome Number." << endl;

else

cout << number << " is NOT a Palindrome Number." << endl;

return 0;

}

**Sample Output:**

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CopyEdit

Enter a number: 12321

12321 is a Palindrome Number.