Introduction & C++ Review Question

1.Please tell what’s wrong with this following code

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| Car \* foo() { Car mazda ; ……… return &mazda ;  } |

2.Please show the output of the following code and explain what is going on

|  |
| --- |
| #include<iostream>  using namespace std;  class Base{  public:  virtual void foo() const{  cout<<"A's foo!"<<endl;  }  };  class Derived : public Base{  public:  void foo(){  cout<<"B's foo!"<<endl;  }  };  int main(){  Base\* o1=new Base();  Base\* o2=new Derived();  Derived\* o3=new Derived();    o1->foo();  o2->foo();  o3->foo();  } |

3. Please show the output of the following code and explain what is going on

|  |
| --- |
| #include<iostream>  using namespace std;  class Base{  virtual void method(){  cout<<"From Base"<<endl;  }  public:  virtual ~Base() {  method();  }  void baseMethod(){  method();  }  };  class A : public Base{  void method(){  cout<<"from A"<<endl;  }  public:  ~A(){  method();  }  };  int main(){  Base\* base=new A();  base->baseMethod();  delete base;  return 0;  } |

4.Please explain the difference of the following two codes. In addition, can you give us examples of each code?

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| --- | --- |
| int (\*Mul)(int a, int b) | int \*Mul(int a, int b); |

5. Implement a class Complex, which represents the Complex Number data type. Implement the following operations

1. A constructor (including a default constructor which creates the complex number 0+0i)
2. Overload operator+ to add two complex numbers
3. Overload operator\* to multiply two complex numbers
4. Overload << and >> to print and read complex numbers. To do this, you will need to decide what you want your input and output format to look like.

Write a program according to the following specifications: use the constructor to define two complex numbers: 3+2i and 0+0i. Input two complex numbers 5+3i and 0+0i using cin. Obtain the sum and product of all four complex numbers using operators + and \*, respectively. Output the results using cout.

6. Explain what is “namespace pollution” which is mentioned in video 1.4 Basic of C++

7. If you want to become professional in OOP, you should know the relationship between classes well. The relationship between classes can be organized below, and please explain each of these relationships in the class.

1. Dependency relationship
2. Association relationship
3. Aggregation relationship
4. Composition relationship
5. Generalization relationship

8. Write down the result of following code: (Scope in C++)

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| --- |
| int i = 12;  for(int i = 0; i<10; i++){  cout << i ;  }  cout << i << endl; |

9. Write down the result of the following code : (Call by value and reference)

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| --- |
| void func(int a, int& b, int\* c){  a += 4;  b += 10;  \*c = a;  }  int main(){  int a = 3, b = 5;  int \*c = &b;  func(a, b, c);  cout << a << endl;  cout << b << endl;  cout << \*c << endl;  } |

10. Write down the result of the following code : (Function Overloading in C++)

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| --- |
| int func(int a, int b){  return b+2;  }  int func(int\* a, int &b){  return ++b;  }  int func(int a, int\* b){  return a+2;  }  int main(){  int a=0, b=0;  cout << func(a,b) << func(&a, b) << func(a, &b) << b<<endl;  } |

11. Write a piece of code to generate a 3x4 2-dimensional array using “new” :

(Dynamic Memory Allocation in C++)

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12. Write down your code to delete the 2-dimensional array created by using “delete” :

(Dynamic Memory Allocation in C++)

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|  |

13. Which line will cause error? What is the reason? How to fix it? (Constructor)

(The only place which you can modify is the first line in public section of class Student)

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| --- |
| class Student{  public:  Student(int h, int w):height(h),weight(w){};  Student(const Student& \_src){  height = \_src.height;  weight = \_src.weight;  }  private:  int height;  int weight;  };  int main(){  Student s(170, 60);  Student w;  Student t(s);  return 0;  } |

14. To make the output be 1 to 5, insert your answer on the red line.

|  |
| --- |
| class A{  public:  A(){cout<<"\_\_"<<endl;}  ~A(){cout<<"\_\_"<<endl;}  };  class B: public A{  public:  B(){cout<<"\_\_"<<endl;}  ~B(){cout<<"\_\_"<<endl;}  };  class C:public B{  public:  C(){cout<<"\_\_"<<endl;}  };  int main(){  C c;  } |