**四川大学期末考试试题（闭卷）**

**（2022——2023学年第 2 学期） A卷**

课程号：304024030 课序号：08 课程名称：高级语言程序设计-Ⅱ 任课教师：赵启军 成绩：

适用专业年级：计算机学院2023级 学生人数：12 印题份数： 学号： 姓名：

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| **考 生 承 诺**  我已认真阅读并知晓《四川大学考场规则》和《四川大学本科学生考试违纪作弊处分规定（修订）》，郑重承诺：  1、已按要求将考试禁止携带的文具用品或与考试有关的物品放置在指定地点；  2、不带手机进入考场；  3、考试期间遵守以上两项规定，若有违规行为，同意按照有关条款接受处理。  **考生签名：** |
| **Ⅰ. Multiple Choice (3 points each, 30 points in total)**  1. What are the values of the following expressions? 5 / 2, 5 == 5u, ( 5 >> 3 ) **（ ）**  A. 2,true,1  B. 2,true,0  C. 1,false,0  D. 1,true,1  2. Which keyword can define a function or a variable in a class that can be shared between all objects of this class?**（ ）**  A. const  B. static  C. template  D. virtual  3. What type of variable can create an alias of another variable? ( )  A. Reference variable  B. Pointer variable  C. Auto variable  D. Const variable |

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| 4. std::cout is**（ ）**  A. a type or class  B. a function  C. a macro  D. an instance of a class  5. Which of the following allows a type to be a parameter of a method, class, or interface in C++?  A. Template  B. Hierarchy  C. Polymorphism  D. Overloading  6. What will the program do when we use ‘new‘ to allocate a memory for a class? **（ ）**  A. Allocate the memory and call the constructor.  B. Allocate the memory and call the destructor.  C. Allocate the memory and call the non-special member function.  D. Allocate the memory and do nothing after that.  7. The iterators for std::list,std::vector are: **( )**  A. bidirectional, bidrectional  B. bidirectional, random-access  C. random-access, bidirectional  D. random-access, random-access  8. The expression std::vector<int> vec( 3 ) creates a container that contains three 0s. What  type of constructor does this expression call?**（ ）**  A. Copy Constructor or Copy Assignment Operator  B. Default Constructor  C. Non-Default Constructor (Parameterized Constructor)  D. Move Constructor  9. What is the output of the following code or is there something wrong?**（ ）**    A. 10  B. 20  C. The output is undefined.  D. Compilation error.  10. What is the output of the following code or is there something wrong? (Don’t care about head files)**（ ）**    A. 1  B. 0  C. The output is undefined.  D. Compilation error. |

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| **Ⅱ. Fill in the Blanks (4 points each, 20 points in total)**  1. nullptr has type \_\_\_\_\_.  2. \_\_\_\_\_ expressions can capture variables in their scope and are anonymous function objects. We can understand them as anonymous inline functions that can be used to replace standalone functions or function objects, making the code more readable.  3. In C++, there is a container that preserves a collection of unique elements, where the position of the elements is determined by the hash of their values. This container is known as \_\_\_\_\_.  4. For each virtual class, a \_\_\_\_\_ is defined as a lookup table of functions to resolve function calls and support dynamic dispatch.  5. The \_\_\_\_\_\_ keyword specifies that the type of the variable will be automatically deduced by the compiler (from its initializer).  **Ⅲ. Concept Explanation (5 points each, 20 points in total)**   1. What are exceptions? How to throw and deal with exceptions and output the exception type in C++? 2. What is RTTI(Run-Time Type Information)? Try to explain this with the example of virtual methods in C++. 3. Explain the main differences between shared\_ptr, unique\_ptr, weak\_ptr. 4. List all the usages of keyword friend and give them brief introductions |

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| **Ⅳ.** **Short Answer Questions (6 points each, 30 points in total)**   1. Give the result of following program with inputs below.      1. A copy constructor creates a new object as a deep copy of an exsisting object.      1. Read and complete the following program. There are 6 blanks in the program marked Q1 to Q6.          1. Can member functions of a class access static variables, and can static member functions of a class access ordinary variables? Why? 2. There are three template classes matrix, invertible\_matrix, orthogonal\_matrix. |