浙江大学 2005 - 2006 学年_春_季学期

《面向对象程序设计》课程期末考试试卷

开课学院：_计算机学院_，考试形式：闭卷

考试时间：_2006_年_4_月_18_日，所需时间：_120_分钟，任课教师________

考生姓名：______________学号：____________专业：____________________

题序	一	二	三	四	五	六	七	八	总 分
得分									
评卷人									

1. Write the output of the code below（20%）:每题 4 分

1)

```
  int aa1=53,aa2=69;
 void f(int a1,int &a2)
 {
   a2=a1;
   a1+=a2;
        cout << aa1 << aa2 << endl;
        aa2 -= 7;
   a2++;
 }
 void main()
 {
  f(aa1,aa2);
  cout << aa1 << aa2 <<endl;
 }
```

5353
5347

2) class A

```
 {
   static int m;
   int n;
 public:
   A(int m,int n){this->m=m;this->n=n;}
   Print(){ cout << m <<"---" << n << endl;}
 };
 int A::m;
 void main()
 {
        A a1(3,4);
        A a2(5,6);
        a1.Print();
        a2.Print();
    }
```

```
5---4
5---6
```

```
3)char a['z'];
  for (char i='a';i<='z';i++)
      a[i] = 'A'+i-'a';
  cout << a['e'] << endl;

  for (char i='a';i<='z';i++)
      a[i] = '1'+i-'a';
  cout << a['e'] << endl;
```

```
E
5
```

4)

```
#include <iostream>
using namespace std;

class A {
        int i;
public:
        A():i(10) {  cout << "A() " <<i <<"\t"; f(); }
        virtual ~A() { cout << "~A() " << "\t"; }
        virtual void f() { i+=11; cout << "A::f() " <<i <<"\t"; }
        void g() { i+=12; cout << "A::g() "<<i<<"\t"; }
};

class B : public A {
        int i;
public:
        B():i(20) { cout << "B() " <<i <<"\t"; f();}
        ~B() { cout << "~B() " << "\t"; }
        void f() { i+=22; cout << "B::f() " <<i <<"\t"; }
        void g() { i+=12; cout << "B::g() "<<i<<"\t"; }
};

B gen()
{
        return B();
}

int main()
```

```
{
        A* p = new B();
        p->f();
        cout <<endl;
        A a;
        B b = gen();
        a = b;
        a.f();
        cout <<endl;
        b.g();
        delete p;
        return 0;
 }
```

```
A() 10  A::f() 21      B() 20  B::f() 42      B::f() 64
A() 10  A::f() 21      A() 10  A::f() 21      B() 20  B::f() 42      A::f() 32
B::g() 54    ~B()   ~A()   ~B()   ~A()   ~A()
```

此题答案不要求 tab 的对齐，但是如果存在换行错误（多余的或缺少的），所有的换行错误合计扣 1 分

5)

```
void main(){
        int m = 555;
        int n = 666;
        int &k = m;
        k++;
        cout << m <<”----“ << n << endl;
        k = n;
        k++;
        cout << m <<”----“ << n << endl;
}
```

```
556----666
667----666
```

2. Please choose the correct answer（15%）1-6 每题 2 分，第 7 题 3 分

D1、In C++ Language，function prototype doesn’t identify (   )
A. The return type of the function. B. The number of arguments of the function
C. The type of arguments of the function.   D. The functionality of the function

B 2、In C++ program, objects communicate each other by (   )
A. Inheritance   B. Calling member functions   C. Encapsulation   D. Function overloading

B 3、For an arbitrary class，the number of destructor function can’t be bigger than (   )
A. 0   B. 1   C. 2   D. 3

C 4、 Suppose a class is defined without any keywords such as public, private and protected，all members default to: (   )

A. public B. protected C. private D. static

C 5、About inline function, which statement is correct? ( )
A. When the program is executed, inline function will insert the object code to every place where this function is called.
B. When the program is compiled, inline function will insert the object code to every place where this function is called.
C. Inline function must be defined inside a class.
D. Inline function must be defined outside a class with keyword "inline".

B 6、During public inheritance, which statement is incorrect concerning the base class objects and the derived class objects? ( )
A. Derived class objects can be assigned to base class objects.
B. Derived class objects can initialize base class references.
C. Derived class objects can access the members of base class.
D. The addresses of derived class objects can be assigned to base class pointers.

C 7、For the class definition:

```
class A{
public:
    virtual void func1( ){ }
    void func2( ){ }
};

class B: public A{
public:
    void func1( ){cout<< " class B func 1 " <<endl;}
    virtual void func2( ){cout<< " class B func 2 " <<endl;}
};
```

Which statement is correct? ( )
A. Both A::func2( ) and B::func1( ) are virtual functions
B. Both A::func2( ) and B::func1( ) are not virtual functions
C. B::func1( ) is virtual function, while A::func2( ) is not virtual function
D. B::func1( ) is not virtual function, while A::func2( ) is virtual function

3. Please correct the following programs（point out the errors and correct them）(15%)

1) 6分，每错2分

```
class A
{
protected:
        static int k;
        int m;
public:
};
int A::k;
class B : public A
{
        int n;
public:
        static void F(int k){
                ~~this->~~A::k = k;
        }
        void F2(int m){
```

A. public B. protected C. private D. static

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C 7、For the class definition:

```
class A{
public:
     virtual void func1( ){ }
     void func2( ){ }
};

class B: public A{
public:
     void func1( ){cout<< ″ class B func 1 ″ <<endl;}
     virtual void func2( ){cout<< ″ class B func 2 ″ <<endl;}
};
```

Which statement is correct? ( )
A. Both A::func2( ) and B::func1( ) are virtual functions
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1) **6分，每错2分**

```
class A
{
protected:
          static int k;
          int m;
public:
};
int A::k;
class B : public A
{
          int n;
public:
          static void F(int k){
                    ~~this->~~A::k = k;
          }
          void F2(int m){
                this->m = m;
        }
};
void main()
{
        B b1,b2;
        b1.F(3);
        b2.F2(5);
}
```

2)**2 分**

```
char a[3];
const char *~~const~~ ptr = a;
const char c = 'a';
ptr = &c;
```

3) **2 分**

```
class base
{
        ...
public:
        virtual void f(void)=0;
        virtual void g(void)=0;
}
class derived: public base
{
        ...
public:
        virtual void f(void);
        virtual void g(void);
};
derived d;
```

4) **5 分，前 3 错各 1 分，最后一题错 2 分(基本正确给一分)，**

```
class A
{
        int *m_ip;
public:
        A(int *ip = NULL){
                if(ip){
                        m_ip = new int[5];
                        ::memcpy(m_ip,ip,sizeof(int)*5);
                }
                else
                        m_ip = NULL;
        }
        ~A(){
                delete  m_ip;                                //改成 delete [] m_ip更好
        }
        A operator+(const A &a) const {                      // (1) (2)
                A temp(m_ip);
                for (int i=0; i<5; i++)
                        temp.m_ip[i] += a.m_ip[i];
                return temp;
        }
        const A &operator=(const A &a){                      // (3)
```

```
                if(a.m_ip){
                        m_ip = new int[5];
                        ::memcpy(m_ip,a.m_ip,sizeof(int)*5);
                }
                else
                        m_ip = NULL;
                return *this;

        }
        friend ostream operator<<(ostream &,const A &);
};
ostream operator<<(ostream &out ,const A &a);                        // (4)

{
        out << "(" ;
        for (int i=0;i<4;i++)
          out << a.m_ip[i] << ",";
        return out << a.m_ip[5] << ")";
}

// Suppose the following code is correct
void main()
{
        const int k[5]={3,5,6,2,1};
        const A a1(k),a2(k);
        A a3(k);
        a3 = a1+a2;
        cout << a3 << endl;
}
```

4、Fill in the blanks（30%）每格2分

1)The function template MaxMin() can find out the max and min of a two dimension array, row is first dimension of length and col is second dimension of length .

```
   #include <iomanip.h>
   template <class T> void MaxMin(T* array, int row, int col)
  {
     T max = array[0], min = array[0];
     for( int i=0 ;i<row;i++)
             for( int j=0 ;j<col;j++)
             {
                   if( max <array[i*col+j] )
                         max = array[i*row+j];
                   if( min > array[i*col+j] )
                         min = array[i*row+j];
             }
     cout << "max=" << max << endl;
     cout << "min=" << min << endl;
  }
  void main()
 {
     int ai[2][3]={{8,10,2},{14,4,6}};
     MaxMin( ai, 2, 3 );
```

```
}
```

2) Please fill in the suitable code to make the program results 60。

```
# include <iostream.h>
class base
{
      int X;
public:
      void Setnum (int initX){X=initX; }
      int Getnum() {return  X+7; }
};

void main()
{
      base test;
      test.Setnum(53);
      cout<<test.Getnum();
}
```

3)

```
class Error{};
class String
{
         char *m_ptr;
public:
         String(char *ptr){
                  m_ptr = new char[strlen(ptr)+1];
                  strcpy(m_ptr,ptr);
         }
         ~String(){
                  delete m_ptr;
         }
         String &operator+=(const String &str){
                  char *s = new char[strlen(m_ptr)+ strlen(str.m_ptr)+1];
                  if(m_ptr){
                           ::strcpy(s,m_ptr);
                           delete[] m_ptr;
                  }
                  ::strcat(s,str.m_ptr);// appends str.m_ptr to s
                  m_ptr = s;
                  return *this;
         }
         bool  operator==(const String &str) const
         {
                  return (::strcmp(m_ptr,str.m_ptr)==0);
         }
         char operator[] (int i) {
                  if(i < ::strlen(m_ptr))
                                    return m_ptr[i];
                  throw Error();
         }
         ostream& operator<<(ostream &out,const String&);
};

ostream& operator<<(ostream &out,const String &str)
```

```
{
        return out<<str.m_ptr;
}

void main()
{
        String s1("Hello "),s2("world!");
        if(s1==s2)
                cout<<"S1==S2\n";
        s1+=s2;
        cout<<s1<<endl;
        int k=0;
        try {
                while(s1[k])
                        cout<<s1[k++];
        }
        catch (Error e) { 也可以catch(Error& e)
                cout<<"\nIndex is out of range!"<<endl;
        }
}
```

5. Coding （20%）

Class shape is an abstract class to represent all kinds of shapes. Inside this class, length() is a virtual function to count the length of the specified shape. While total() is a function to get total length of different shapes. Please derive triangle, rectangle class from shape class, and write their respective function body of length().

```
class shape{
public:
     virtual float length( )=0
};

float total(shape *s[],int n)
{
     float sum=0.0;
     for(int i=0;i<n;i++)
     sum+=s[i]->length( );
     return sum;
}
```

```
class triangle : public shape {
        float e1, e2, e3;
public:
        triangle(float ei1, float ei2, float ei3):e1(ei1),e2(ei2),e3(ei3) {}
        float length() { return e1+e2+e3; }
};

class rectangle : public shape {
        float width, height;
public:
        rectangle(float w, float h):width(w), heigh(h) {}
        float length() { return 2*(width+height); }
};
```

每个类 10 分；
成员变量定义：2 分
length 函数：4 分
构造函数：2 分；
结尾的分号：1 分；
其它：1 分，如继承的写法等。
（如果三角形和矩形的类声明写顶点坐标也可）。