第一部分 笔试

I．Read the following programs：（20 scores）

1．What does the following program output? (5 scores)

class MyClass

{

public:

MyClass()

{

cnt++;

}

~MyClass()

{

cnt--;

}

static int Count()

{

return cnt;

}

private:

static int cnt;

};

int MyClass::cnt = 0;

int main()

{

cout << MyClass::Count() <<' ';

MyClass tl, t2;

MyClass\* p1 = new MyClass;

MyClass\* p2 = new MyClass;

cout << MyClass::Count() <<' ';

delete p1;

delete p2;

cout << MyClass::Count() << endl;

return 0;

}

2．What does the following program output? (5 scores)

class MyClass1

{

public:

MyClass1(int i)

{ x=i; };

virtual void print()

{ cout<<x<<endl; };

private:

int x;

};

class MyClass2: public MyClass1

{

public:

MyClass2(int i):MyClass1(i+10)

{ x=i; };

virtual void print()

{

MyClass1::print();

cout<<x<<endl;

};

private:

int x;

};

int main()

{

MyClass1 a(1);

MyClass2 b(2);

MyClass1 \*s[2];

s[0]=&a;

s[1]=&b;

for(int i=0;i<2;i++)

s[i]->print();

return 0;

}

3. What does the following program output? (5 scores)

class A{

public:

A(int a){ cout << "A ctor!" << endl; }

A(){ cout << "A default ctor!"<< endl; }

~ A() { cout << "A dtor!" << endl; }

};

class B{

public:

B(int a, int b){ cout<<"B ctor!"<<endl; }

B(): m(0) { cout<<"B default ctor!"<<endl;}

~B(){ cout<<"B dtor!"<<endl;}

private:

A m;

};

class C: public B{

public:

C(int a, int b) { cout<<"C ctor!"<<endl; }

~C(){ cout<<"C dtor!"<<endl;}

private:

A m;

};

int main()

{

C obj(0, 0);

return 0;

}

4. What does the following program output? (5 scores)

class Obj{

int id;

public:

Obj(int n){ id = n; cout << "ctor " << id << endl;}

~Obj(){ cout << "dtor " << id << endl;}

};

void f2( )

{

double a = 0;

try{

throw a;

}

catch(...){

cout<<"OK2!"<<endl;

throw;

}

cout<<"end2"<<endl;

}

void f1( )

{

try{

f2( );

}

catch(char){

cout<<"OK1!"<<endl;

}

cout<<"end1"<<endl;

}

int main( )

{

Obj o(0);

try{

Obj o(1);

f1( );

}

catch(double){

cout <<"OK0!"<<endl;

}

cout<<"end0"<<endl;

return 0;

}

II．Fill in the blanks in each of the following to complete the programs. （20 score）

1．(10 scores) According to the output, complete the following program:

template<typename T>

class Set

{

public:

Set(int =10);

~Set()

{ delete [] setPtr; }

bool put(int index, T);

T get(int index);

private:

int size;

T \*setPtr;

};

template <typename T>

Set<T>::Set(int s)

{

size=s;

(1)

}

template <typename T>

(2)

{

if(index>=0 && index<size)

{

(3)

return true;

}

else

return false;

}

template <typename T>

T Set<T>::get(int index)

{

if(index>=0 && index<size)

(4)

else

cout<< "Out of Range!"<<endl;

}

int main()

{

Set<int> s1;

for(int i=0;i<10;i++)

s1.put(i,i+1);

for(int i=0;i<10;i++)

cout<<s1.get(i)<<" ";

cout<<endl;

(5)

for(int i=0;i<5;i++)

s2.put(i,(i+1)\*1.1);

for(int i=0;i<5;i++)

cout<<s2.get(i)<<" ";

cout<<endl;

return 0;

}

Output:

1 2 3 4 5 6 7 8 9 10

1.1 2.2 3.3 4.4 5.5

2. Complete the following program, which writes the object of GradeBook class to the file “Gradebook.dat”, and then reads data from the file and prints to the screen.

#include <iostream>

#include <string>

(1)

using namespace std;

class GradeBook{

friend (2) operator<<(ostream& output, const GradeBook &book){

output << book.courseName << endl << book.teacherName << endl;

(3)

}

friend istream& operator>>(istream& input, GradeBook &book){

(4)

return input;

}

public:

GradeBook(string course, string teacher){

courseName = course;

teacherName = teacher;

}

private:

string courseName, teacherName;

};

int main()

{

GradeBook book("C++", "TeacherName");

ofstream fout("Gradebook.dat");

fout << book;

fout.close();

(5) // open the file Gradebook.dat

fin >> book;

fin.close();

cout << book << endl;

return 0;

}

III．Write programs according to the requests（20 score）

1．(10 scores) Define a class for polynomial a\*x2+bx+c, overload the +, - operator, and implement two functions, Compute to get its result, Root to get it root.

2. (10 scores) Compared with Stack, Queue is a First-In-First-Out (FIFO) data structure. As shown in the below figure, in a FIFO data structure, the first element added to the queue will be the first one to be removed. Write a program to implement and test Queue class-template, which should provides dequeue, enqueue, isEmpty, isFull member functions.