2018-2019 OOP 期末考试

4-1 The output of the code below is:

Author: 翁恺
Organization: 浙江大学

```cpp
#include<iostream>
using namespace std;
class MyClass {
public:
    MyClass(int x): val(x) {}
    void Print() const {cout << 1 << val;}
    void Print() {cout << 2 << val;}
private:
    int val;
};
int main() {
    const MyClass obj1(10);      const            const
    MyClass obj2(20);
    obj1.Print();
    obj2.Print();
    return 0;
}
```

110220   (3分)

4-1 Accepted (3 point(s))

4-2 The output of the code below is:

Author: 翁恺
Organization: 浙江大学

```cpp
#include<iostream>
using namespace std;
class AA {
public:
    AA() { cout << 1; }
    ~AA() { cout << 2; }
};
class BB: public AA {
    AA aa;
public:
    BB() { cout << 3; }
    ~BB() { cout << 4; }
};
int main() {
    BB bb;
    return 0;
}
```

113422   (3分)

4-2 Accepted (3 point(s))

4-3 The output of the code below is:

Author: 翁恺
Organization: 浙江大学

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

class A {
public:
        A() { cout << 1; }
} a;

int main()
{
        cout << 2;
        A a;

        return 0;
}
```

121   (3分)

4-3 Accepted (3 point(s))

4-4 write the output of the code below.

Author: hulanqing
Organization: 浙江大学

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

```
class INCREMENT
{
public:
    INCREMENT( int v = 0, int i = 1 );
    void addIncrement()
    {
        v += increment;
    }
    void print() const;
    int get() const
    {
            return v;
    }
private:
    int v;
    const int increment;
};

INCREMENT::INCREMENT( int v, int i ) : v( v ), increment( i )
{
}

void INCREMENT::print() const
{
    cout << v << endl;
}
int main()
{
    INCREMENT value( 1, 2);
    value.print();

    for ( int j = 1; j <= 2; j++ )
    {
        value.addIncrement();
        value.print();
    }
    return 0;
}
```

One for each line:

line 1: 1   (1分) line 2: 3   (1分)
line 3: 5   (1分)

4-4 **Accepted** (3 point(s))

4-5 write the output of the code below.

Author: hulanqing
Organization: 浙江大学

```
#include<iostream>
using namespace std;
class TEST
{
    int num;
public:
    TEST( int num=0);
    void increment( ) ;
    ~TEST( );
};
TEST::TEST(int num) : num(num)
{
    cout << num  << endl;
}
void TEST::increment()
{
        num++;
}
TEST::~TEST( )
{
    cout << num  << endl;
}
int main( )
{
        TEST array[2];
        array[0].increment();
        array[1].increment();
        return 0;
}
```

One for each line:

line 1: 0 (1分)
line 2: 0 (1分)
line 3: 1 (1分)
line 4: 1 (1分)

4-6 The output of the code below is:

Author: 翁恺
Organization: 浙江大学

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

class MyClass {
public:
    MyClass() {
        ++count;
    }
    ~MyClass() {
        --count;
    }
    static int getCount() {
        return count;
    }
private:
    static int count;
};
int MyClass::count = 0;
int main() {
    MyClass obj;
    cout << obj.getCount();
    MyClass obj2;
    cout << MyClass::getCount();
    cout << obj2.getCount();
    return 0;
}
```

122 (3分)

4-7 write the output of the code below.

Author: hulanqing
Organization: 浙江大学

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

enum NOTE { middleC, Csharp, Cflat };
class Instrument {
public:
  virtual void play(NOTE) const = 0;
  virtual char* what() const = 0;
  virtual void adjust(int) = 0;
};

class Wind : public Instrument {
public:
  void play(NOTE) const {
    cout << 1 << endl;
  }
  char* what() const { return "Wind"; }
  void adjust(int) {}
};

class Percussion : public Instrument {
public:
  void play(NOTE) const {
    cout << 2 << endl;
  }
  char* what() const { return "Percussion"; }
  void adjust(int) {}
};

class Stringed : public Instrument {
public:
  void play(NOTE) const {
    cout << 3 << endl;
  }
  char* what() const { return "Stringed"; }
```

```cpp
    void adjust(int) {}
};

class Brass : public Wind {
public:
  void play(NOTE) const {
    cout << 11 << endl;
  }
  char* what() const { return "Brass"; }
};

class Woodwind : public Wind {
public:
  void play(NOTE) const {
    cout << 12 << endl;
  }
  char* what() const { return "Woodwind"; }
};

void tune(Instrument& i) {
  i.play(middleC);
}

void f(Instrument& i) { i.adjust(1); }

int main() {
  Wind flute;
  Percussion drum;
  Stringed violin;
  Brass flugelhorn;
  Woodwind recorder;
  tune(flute);
  tune(drum);
  tune(violin);
  tune(flugelhorn);
  tune(recorder);
  f(flugelhorn);
  return 0;
}
```

One for each line:

line 1: 1   (1分)

line 2: 2   (1分)

line 3: 3   (1分)

line 4: 11   (1分)

line 5: 12   (1分)

4-7 Accepted (5 point(s))

4-8 write the output of the code below.

Author: hulanqing
Organization: 浙江大学

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

class Pet {
public:
    virtual string speak() const { return "pet!"; }
};
class Dog : public Pet {
public:
    string speak() const { return "dog!"; }
};
int main() {
    Dog ralph;
    Pet* p1 = &ralph;
    Pet& p2 = ralph;
    Pet p3;
    cout << p1->speak() <<endl;
    cout << p2.speak() << endl;
    cout << p3.speak() << endl;
    return 0;
}
```

dog!   (1分)

dog!   (1分)

pet! (1分)

4-9 The output of the code below is:

Author: 翁恺
Organization: 浙江大学

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

class A {
        int i;
public:
        A() : i(0) {}
        ~A() { cout << get(); }
        void set(int i) { this->i = i; }
        int get() { return i; }
};

int main()
{
        A* p = new A[2];
        delete p;
        return 0;
}
```

0   (3分)