## 一、单项选择题（本大题共 30 小题，每小题 1 分，共 30 分）

提示：在每小题列出的四个备选项中只有一个是符合题目要求的，请将其代码填写在题后的括号内。错选、多选或未选均无分

1、What is the size of a double variable in Java?

    A. 2 bytes      B. 4 bytes     C. 8 bytes     D. It depends on the compiler setting

2、Which of the following statements is (are) true about the use of an asterisk (*) in a Java import statement?

    I. It does not incur run-time overhead.

    II. It can be used to import multiple packages with a single statement.

    III. It can be used to import multiple classes with a single statement.

    A.   I and III only      B.   III only     C.   I only     D.   I, II, and III

3、What is displayed by

    *Systsem.out.println("1" + new Integer(2) + 3);*

    A. 6      B. 15      C. 123      D. ClassCastException

4、What is the right way to handle abnormalities in input on Java?

    A.   By handling these problems by providing exception handlers

    B.   By writing while loops to guard against bad input

    C.   By using the class FileFilter which gracefully filters out bad input data

    D.   By always specifying the throws clause in every method header where file I/O is performed

5、According to Javadoc convention, the first sentence of each Javadoc comment should be

    A.   an @version tag

    B.   the order of lines is not important

    C.   an @author tag

    D.   a summary sentence of the declared entry
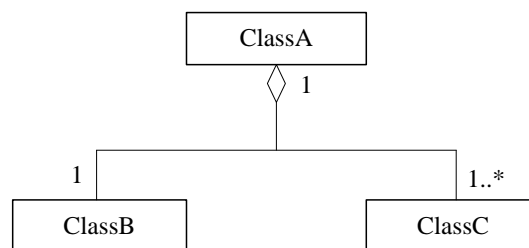
6、Which of the following statements about constructors in Java is true.

    A.   A class must define at least one constructor

    B.   A class can define more than one constructor

    C.   A constructor must be defined as public

    D.   A constructor must be defined as static

7、Which of the following is not a method of java.util.ArrayList.

    A. add(Object o)

    B. remove(Object o)

    C. insert(int i, Object o)

    D. contains(Object o)

8、Consider the following UML class diagram.



According to the diagram, which of the following statements is true?

    A.   ClassA and ClassB each contain at least one reference to an instance of ClassC.

    B.   ClassB and ClassC are both subclasses of ClassA.

    C.   ClassA is composed of one instance of ClassB and one or more instances of ClassC.

    D. ClassB has a one-to-one association with ClassA and a one-to-many association with

       ClassC.

9、What is the output of the following code segment.

      *List cities = new ArrayList();*

      *cities.add("Atlanta");*

*cities.add("Boston");*

*for(int i=1;i<cities.size();i++)*

   *cities.add(i, "+");*

*System.out.println(cities);*

A. [Atlanta, Boston]

B. [Atlanta, +, Boston]

C. [Atlanta, Boston, +]

D. No output because the program goes into an infinite loop

10、Regarding the following declaration, what is the index of the element containing 45?

int[]  numbers = {3, 10, 45, 6, 132};

A.  1

B.  2

C.  45

D.  0

11、Consider the following Java program segment.

    public class Test {

        public Test( ) {

            this(0);

            System.out.println("default");

        }

        public Test( int i ) {

            System.out.println("non-default");

        }

        public static void main(String[] args) {

```
        Test t = new Test();

    }

}
```

Which of the following will be output during execution of the program segment?

A. The line of text "non-default"

B. The line of text "default"

C. The line of text "non-default" followed by the line of text "default"

D. The line of text "default" followed by the line of text "non-default"

12、If a class contains a constructor, that constructor will be invoked

A. each time an object of that class is instantiated

B. once the first time an object of that class is instantiated

C. each time an object of that class goes out of scope

D. once at the beginning of any program that uses that class

13、In Java, int a = 5/2, what's the result?

A. 2

B. 2.5

C. 3

D. None of the above

14、Consider the Java program below.

```
public class Arr{

    public static void main(String[] args) {

        int[] a = {1, 2, 3};

        System.out.println(a[1]);

        System.out.println(a[3]);
```

    }

}

 Which of the following is true about the result of executing the program?

A.  The number 2 is printed and a run-time exception terminates execution.

B.  The number 2 is printed and there is no abnormal termination.

C.  The number 1 is printed and there is no abnormal termination.

D.  The number 3 is printed and a run-time exception terminates execution.

15、Legal Java statements to initialize an array reference include which of the following?

I.  int[] aobj = {0, 1, 2};

II.  int[4] aobj = {0, 1, 2,3};

III.  int[] aobj = new int[3];

A.  I and II only　　B.  I only　　C.  III only　　D.  I and III only

16、Which of these keywords is used to refer to member of parent class from a child class?

A.  upper　　B.  super　　C.  this　　D.  None of the above

17、Consider the following method call, where v is an instance of the class java.util.Vector.

v.size();

This method call returns the number of

A.  bytes used by v

B.  times that the method v.add has been called

C.  Vector objects that have been instantiated

D.  elements in the vector represented by v

18、Which of the following statements is (are) true about inheritance in Java?

I.  A class can extend more than one abstract class.

II.  A class can implement more than one interface.

A.　II only　　B.　None　　C.　I and II　　D.　I only

19、A design pattern is typically used to

A.　ensure that code executes at optimal speed during runtime

B.　reduce the number of classes in the design of a program

C.　allow the use of object-orientated concepts in a language that is not object-oriented

D　describe a practical solution to a common design problem

20、Which of the following statements is (are) true in Java?

I.　An abstract class may contain data fields.

II.　Interfaces may contain data fields.

A.　I only　　B.　II only　　C.　None　　D.　I and II

21、Which of these method of String class can be used to test to strings for equality?

A. isEqual(Object obj)

B. isEquals(Object obj)

C. equal(Object obj)

D. equals(Object obj)

22、If a file opened for reading does **not** exist, which of the following events will occur in Java?

A.　A new file will be created.

B.　A run-time error will occur.

C.　A NullPointerException will be raised.

D.　A FileNotFoundException will be raised.

23、What is the ouput of this program

```
class StringClass {

    public static void main(String args[]) {

        String obj = "I Like Java";
```

```
        System.out.println(obj.charAt(3));

    }

}
```

A. l       B. i       C. k       D. e

24、Which of the following is (are) true regarding event handling in Java?

    I.   When a GUI component is created, the component automatically has the ability to generate events during user interaction.

    II.   Each Listener object must be registered with the specific component object or objects for which the Listener object is to respond.

    A.   None      B.   II only      C.   I only      D.   I and II

25、Which of the following is a Java event that is generated when a JButton component is pressed?

    A.   ButtonEvent    B.   ActionEvent    C.   ClickEvent    D.   WindowEvent

26、The Strategy design pattern is likely to be useful when implementing which of the following?

    I.   An application that offers several alternate sorting algorithms

    II.   A simple class to store the address of an organization of which only one instance can be instantiated

    A.   II only      B.   None      C.   I and II      D.   I only

27、Which of the following statements about Java classes is (are) accurate?

    I.   A class may have only one parent.

    II.   Two or more classes may share a parent.

    A.   I and II      B.   None      C.   I only      D.   II only

28、Which of the following categorizations can be applied to both the data fields and the methods in a Java class?

    A.   native and non-native

B.   default and non-default

C.   static and non-static

D.   abstract and non-abstract

29、Which of the following is true about association and aggregation in UML class diagrams?

A.   Association and aggregation have no meaningful relationship.

B.   Association is a special form of aggregation.

C.   Association is the opposite of aggregation.

D.   Aggregation is a special form of association.

30、What will be output when the following Java program segment is executed?

int x = 5;

int y = 2;

System.out.println("x + y");

A.   x + y        B.   7        C.   5+2        D.   52

## 二、基本程序设计题 (本大题共 2 小题，共 20 分)

1. (10 points) The following class **WordList** is designed to store and manipulate a list of words. The incomplete class declaration is shown below. You will be asked to implement two methods.

```
public class WordList {

    private ArrayList<String> myList;


    /* return the number of words in myList whose length is exactly the same

        as the given argument len */

    public int numWordsOfLength(int len) {

        // to be implemented
```

```
        }


        /* all words that are exactly len letters long will be removed from myList */

        public void removeWordsOfLength(int len) {

                // to be implemented



        }

    }
```

2. (10 points) The class Pet is an abstract class as shown in the following declaration.

```
    public abstract class Pet {

        private String id;

        private String name;

        public Pet(String id, String name) {

            this.id = id;

            this.name = name;

        }

        public String getName() {

            return name;

        }

        public abstract String speak();

    }
```

The subclass Dog has the partial class declaration shown below. The Dog method speak should return "dog-sound".

```
public class Dog extends Pet {

    public Dog(String name) {

        // to be implemented



    }



    // method speak to be implemented



    // if the argument obj is a Dog and has the same id, return true

    public boolean equals(Object obj) {



    }

}
```

## 三、应用题（本大题共 1 小题，共 20 分）。

Consider a guessing game in which a player tries to guess a hidden word. The hidden word contains only capital letters and has a length known to the player. A guess contains only capital letters and has the same length as the hidden word. You are required to implement a class named *HiddenWord* with attributes (String *word*, int *length*, int *maxIters*) and method (void *guess*()). The

hidden word will be passed to the constructor

*HiddenWord puzzle = new HiddenWord("HARPS");*

Then you print out the word length and ask the player to input a guess. After a guess is made, the player is given a hint that is based on a comparison between the hidden word and the guess. If the guess is not correct, let the player try again until the player success or the max number of guess 10 is reached.

The following shows several guesses and the hints

"AAAAA"          +A+++

"HELLO"          H****

"HEART"          H*++*

"HARMS"          HAR*S

"HARPS"          HARPS

The meaning of the symbols are:

*                      not in the hidden word

+                      also in the hidden word, but in a different position

matching letter          also in the same position in the hidden word

APIs: String toUpperCase()

char charAt(int index)

boolean contains(CharSequence s)

static String valueOf(char c)

## 四、UML 类图设计（本大题共 1 小题，共 30 分）。

A class called **Author** is designed to model a book's author. It contains: three private instance variables: name (String), email (String), and gender (char of either 'm' or 'f'), one constructor to

initialize the name, email and gender with the given values, public getters/setters methods for each attribute, and a toString() method that returns "Author[name=?,email=?,gender=?]", e.g., "Author[name=Tan Ah Teck,email=ahTeck@somewhere.com,gender=m]".

A class called **Book** is designed to model a book written by one author. It contains:

- four private instance variables: name (String), author (of the class Author you have just created, assume that a book has one and only one author), price (double), and quantity (int)

- two constructors

- public methods getName(), getAuthor(), getPrice(), setPrice(), getQty(), setQty().

- a toString() that returns Book[name=?,Author[name=?,email=?,gender=?],price=?,qty=?] You should reuse Author's toString().

(1) Draw a class diagram according to the description above

(2) Complete the source code for both classes

(3) Write JUnit Test Case to verify the toString methods of class **Author** and **Book**