四川大学期末考试试题（闭卷）

（2018~2019 学年第 2 学期）　　B 卷

课程号：**311075030**　课程名称：**面向对象程序设计导论**　任课教师：＿＿＿＿

适用专业年级：**软件工程 2018 级**　学号：＿＿＿＿　姓名：＿＿＿＿

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：

题　　号	一 (30%)		二(35%)	三(35%)
得　　分				
卷面总分		阅卷时间		

注意事项：1. 请务必将本人所在学院、姓名、学号、任课教师姓名等信息准确填写在试题纸和添卷纸上；

2. 请将答案全部填写在本试题纸上；

3. 考试结束，请将试题纸、添卷纸和草稿纸一并交给监考老师。

评阅教师	得分

一、单项选择题（本大题共 15 小题，每小题 2 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，请将其代码填写在下表中。错选、多选或未选均无分。

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

1. What is the size of a char variable in Java?
   (A) 1 byte
   (B) 2 bytes
   (C) 4 bytes
   (D) It depends on the compiler settings

2. 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 File Filter which gracefully filters out bad input data
   (D) By always specifying the throws clause in every method header where file I/O is performed

3. Suppose x, y, and z are variables of type int. Consider the following three conditions:
   I. (x == y) && (y == z) && (x == z)
   II. (x == y) || (y == z) && (x == z)
   III. (x - y) * (x - z) * (y - z) == 0

Which of these conditions is (are) always true if x == y is true?

(A) I. Only

(B) II. Only

(C) II. and III. only

(D) I. and II. and III

4. Consider the following method.

```
public int multiply (int n) {
    if (n == 0)
        return 1;
    else if (n % 2 == 1)
        return n;
    else
        return n * multiply(n - 2);
}
```

What will be returned by a call to multiply (8)?

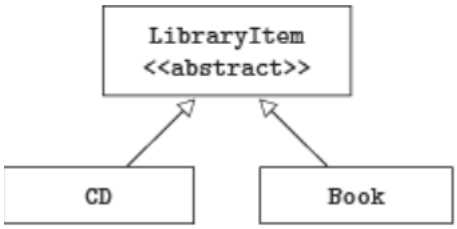
(A) 1

(B) 8

(C) (8)(7)(6)(5)(4)(3)(2)

(D) (8)(6)(4)(2)

5. Consider the inheritance hierarchy of classes below.



Which of the following declarations will cause an error? You may assume that each of the classes above has a default constructor.

I. Library Item = new Library Item ();

II. Book b = new Library Item ();

III. Library Item cd = new CD ();

(A) I. Only

(B) II. Only

(C) III. only

(D) II. and III. only

6. Consider the following declarations.

```
public interface Flyer {
```

```
    int flies Higher Than (Flyer other);
    //Other methods are not shown.
}
public class Eagle implements Flyer {
    //Methods are not shown.
}
```

Which of the following method headers of flies Higher Than can be added to the Eagle class so that it will satisfy the Flyer interface?

(A) public int flies Higher Than (Eagle other)

(B) public int flies Higher Than (Flyer other)

(C) public Boolean flies Higher Than (Flyer other)

(D) int flies Higher Than (Flyer other)

7. A collection typically models a _____ relationship.

(A) one-to-one

(B) zero-to-one

(C) many-to-many

(D) one-to-many

8. What is used to indicate that a method does not return a value?

(A) the keyword static

(B) the keyword void

(C) the name of the class to which it belongs

(D) the omission of the return type

9. Array elements may only be retrieved using _____, whereas vector elements may also be retrieved using _____.

(A) indexes, iterators

(B) iterators, indexes

(C) names, indexes

(D) indexes, names

10. 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

11. 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 Null Pointer Exception will be raised.

(D) A File Not Found Exception will be raised.

12. Refer to the following data field and method.

```
private int [] arr;
/** Precondition: arr contains at least one element. */
public void do Something () {
    int sum1 = 0;
    int sum2 = 0;
    for (int num: arr)
    {
        if (num > 0 || Math. abs (num) % 2! = 0)
            sum1 += num;
        else if (num < 0 && Math. abs (num) % 2 == 0)
            sum2 += num;
    }
    System. out. println (sum1);
    System. out. println (sum2);
}
```

Which of the following best describes the value of sum1 output by method do Something?

(A) The sum of all positive values in arr

(B) The sum of all odd values in arr

(C) The sum of all positive values and odd negative values in arr

(D) The sum of all positive values and even negative values in arr

13. Refer to the following data field and method.

```
private Array List<String> list;
public void my stery () {
    String str1 = "", str2 = "";
    for (String s: list)
    {
        str1 += s. substring (1);
        str2 += s. substring (1, 2);
    }
    System. out. println (str1);
    System. out. println (str2);
```

```
}
```

Assume that the contents of list are: dog cat cow bird

What will be output for str1 by a call to mystery?

(A) dogcatcowbird

(B) ogatowird

(C) oaoi

(D) dccb

14. Consider the following declarations.

```
public class ClassA {      ...
    public void do Something (ClassB b, ClassC c)
    {     ...
    }
}
public class ClassB extends ClassA {
    ...
}
public class ClassC extends Class B {
    ...
}
Class A obj A = new Class A ();
Class B obj B = new Class B ();
Class C obj C = new Class C ();
```

Which of the following is a correct call to do Something?

(A) objC. doSomething (objC, objC);

(B) objC. doSomething (objA, objA);

(C) objB. doSomething (objC, objB);

(D) objB. doSomething (objB, objB);

15. Consider the following Java classes:

```
class A {
    public void foo (Object o) {System. out. println ("A");}
}
class B {
    public void foo (String o) {System. out. println ("B"); }
}
class C extends A {
    public void foo (String s) {System. out. Println ("C");}
}
```

```
class D extends B {
    public void foo (Object o) {System. out. println ("D");}
}
class Main {
    public static void main (String [] args) {
        A a = new C (); a. foo("Java");
        C c = new C (); c. foo("Java");
        B b = new D (); b. foo("Java");
        D d = new D (); d. foo("Java");
    }
}
```

What is the output of the execution of the method main in class Main?

(A) The code will print A C B D

(B) The code will print A C B B

(C) The code will print C C B B

(D) The code will print C C B D

评阅教师	得分

二、编程、设计及分析题（本大题 4 小题，共 35 分）。

提示：每小题给出了一个程序设计要求，请按照要求写出源程序代码，如果源程序代码中出现语法错误或逻辑错误，则酌情扣分。

Consider the following Java class that is intended to represent a specific day in an eight-week University term.

```
public class Term Day {
    public int day; // The day of the week as a number 0-6
    public int week; // The week of the term as a number 0-7
};
```

1. (10 points) Create a class Encapsulated Term Day, which applies the principles of data encapsulation as an alternative to Term Day. Your modified class should throw an exception if an invalid day of the week or week number is specified.
2. (5 points) The use of two int variables to represent the day and the week requires 64 bits of storage. How many bits are actually required? Adapt Encapsulated Term Day class to achieve the same functionality using only one member variable of a primitive type. You should justify your choice of type.
3. (5 points) Create a class Immutable Term Day that is an immutable version of Term Day.
4. (15ponts) By applying one or more appropriate design patterns and adapting

Immutable Term Day appropriately, show how to ensure that only one

Immutable Term Day object is ever created for a given day/week combination. Give the class diagram of the design pattern you use and implement the source code.

评阅教师	得分

三、程序设计（本题共 **35** 分）

Modeling the Student Registration System (SRS) by UML class diagram.

Requirement Specification:

We have been asked to develop an automated Student Registration System (SRS).

1. This system will enable students to register online for courses each semester, as well as track a student's progress toward completion of his or her degree.
2. When a student first enrolls at the university, the student uses the SRS to set forth a plan of study as to which courses, he or she plans on taking to satisfy a particular degree program, and chooses a faculty adviser.
3. The SRS will verify whether or not the proposed plan of study satisfies the requirements of the degree that the student is seeking. Once a plan of study has been established, then, during the registration period preceding each semester, the student is able to view the schedule of classes online, and choose whichever classes he or she wishes to attend, indicating the preferred section (day of week and time of day) if the class is offered by more than one professor.
4. The SRS will verify whether or not the student has satisfied the necessary prerequisites for each requested course by referring to the student's online transcript of courses completed and grades received (the student may review his or her transcript online at any time).
5. Assuming that (a) the prerequisites for the requested course(s) are satisfied, (b) the course(s) meets one of the student's plan of study requirements, and (c) there is room available in each of the class(es), the student is enrolled in the class(es). If (a) and (b) are satisfied, but (c) is not, the student is placed on a first-come, first-served waiting list. If a class/section that the student was previously waitlisted for becomes available (either because some other student has dropped the class or because the seating capacity for the class has been increased), the student is automatically enrolled in the waitlisted class, and an email message to that effect is sent to the student.

6. It is the student's responsibility to drop the class if it is no longer desired; otherwise, he or she will be billed for the course. Students may drop a class up to the end of the first week of the semester in which the class is being taught.