

University Interscholastic League

Computer Science Competition 2003-04

JAVA PRACTICE QUESTIONS – SET 4

- Remember that calculators are NOT permitted for this year's contests.

QUESTION 1

What is the value of the following expression when `int x` is 45 and `int y` is 128?

`x || y`

- A. true B. false C. 128 D. 173 E. Syntax error

QUESTION 2

An object of which of the following types can be used to examine the elements of a `Set` one at a time?

- A. `Map` B. `Double` C. `String` D. `Iteraror` E. None of these

QUESTION 3

What does `mystery()` do?

- A. Selection sort B. Binary search
 C. Insertion sort D. Mergesort
 E. None of these

```
public static void
    mystery(Comparable[] A) {
    int len = A.length;
    for (int i=1; i<len; ++i) {
        int loc1=0, loc2=i-1;
        while (loc1<=loc2) {
            int mid=(loc1+loc2)/2;
            if (A[mid].compareTo(A[i])<0)
                loc1=mid+1;
            else loc2=mid-1;
        }
        Comparable temp=A[i];
        for (int j=i; j>loc1; --j)
            A[j]=A[j-1];
        A[loc1]=temp;
    }
}
```

QUESTION 4

Suppose the array below is passed to `mystery()`. What will it look like after the first iteration of the outer `for` loop is complete?

"goat"	"cat"	"fish"	"dog"
--------	-------	--------	-------

- A.

"cat"	"dog"	"fish"	"goat"
-------	-------	--------	--------

 B.

"goat"	"fish"	"dog"	"cat"
--------	--------	-------	-------

 C.

"cat"	"fish"	"dog"	"goat"
-------	--------	-------	--------

 D.

"cat"	"goat"	"fish"	"dog"
-------	--------	--------	-------

 E. None of these

QUESTION 5

What is the worst case running time of `mystery()` on an array of length `n`? Choose the smallest correct answer.

- A. $O(n)$ B. $O(n^2)$ C. $O(n^3)$
 D. $O(n^4)$ E. None of these

QUESTION 6

What replaces **<*1>** in the code to the right to give the return type of the `withdraw()` method?

- A. integer
- B. int
- C. boolean
- D. bool
- E. More than one of these

QUESTION 7

What replaces **<*2>** so that `balance` is increased by the fraction given by `apr`?

- A. `balance*=apr;`
- B. `balance+=apr;`
- C. `balance*=1+apr;`
- D. `balance+=1+apr;`
- E. None of these

QUESTION 8

Assume that **<*1>** and **<*2>** are filled in correctly. What is output by the code below?

```
Account acc = new Account(10, 0.05);
acc.compound();
System.out.print(acc.getBalance());
```

- A. 10
- B. 10.0
- C. 10.5
- D. 11
- E. None of these

```
public class Account {
    public Account() {
        balance=0;
        apr=0.05;
    }

    public Account(double initDep,
                    double rate) {
        balance=initDep;
        apr=rate;
    }

    public double getBalance() {
        return balance;
    }

    public void deposit(double amt) {
        balance+=amt;
    }

    public <*1> withdraw(double amt){
        if (balance>=amt) {
            balance-=amt;
            return true;
        }
        else return false;
    }

    public void compound() {
        <*2>
    }

    private double balance;
    private double apr;
};
```

<p>QUESTION 9</p> <p>What is output by the code to the right?</p> <p>A. abcdef B. abcdefxyz C. abxyzcdef D. abcdxyzef E. None of these</p>	<pre>StringBuffer s = new StringBuffer("abcdef"); s.insert(3,"xyz"); System.out.print(s);</pre>
<p>QUESTION 10</p> <p>What is returned by process (15, 15)?</p> <p>A. 15 B. 0 C. 225 D. -1 E. None of these</p>	<pre>public static int process(int x, int y) { switch(y%4) { case 0: return x+y; case 1: return x-y; case 2: return x*y; case 3: return x/y; default: return x; } }</pre>
<p>QUESTION 11</p> <p>What is returned by process (27, -2)?</p> <p>A. 27 B. 0 C. -54 D. 16 E. None of these</p>	
<p>QUESTION 12</p> <p>Which of the following constructors could be added to the Test class so that the constructors that are already part of the class will compile?</p> <p>A. private Test() B. Test(String s, int z) C. public Test(int z, String s) D. private This(int z, String s) E. None of these</p>	<pre>public class Test { public Test() { this(0); } public Test(int x) { this(0, ""); } // rest of class not shown }</pre>

QUESTION 13

What is output by the code to the right?

- A. 11.7hi11.7
- B. 11.7hi56.7
- C. 56.7hi11.7
- D. Syntax error
- E. None of these

```
int x = 5;
double z = 6.7;
String s = "hi";
System.out.print(x+z+s+x+z);
```

QUESTION 14

If the code to the right does not throw any exceptions, which parts of the code will run?

- A. part 1
- B. parts 1 and 2
- C. parts 1 and 3
- D. parts 1, 2, and 3
- E. None of these

```
try {
    // part 1 code not shown
}
catch(RuntimeException e) {
    // part 2 code not shown
}
finally {
    // part 3 code not shown
}
```

QUESTION 15

Which of the methods from the `Object` class is called inside the `HashSet add()` method?

- A. `hashCode()`
- B. `toString()`
- C. `finalize()`
- D. `getClass()`
- E. None of these

COMPUTER SCIENCE ANSWER KEY

JAVA PRACTICE QUESTIONS SET 4

- | | | | |
|-----|---|-----|---|
| 1. | E | 11. | A |
| 2. | D | 12. | C |
| 3. | C | 13. | B |
| 4. | D | 14. | C |
| 5. | B | 15. | A |
| 6. | C | | |
| 7. | C | | |
| 8. | C | | |
| 9. | E | | |
| 10. | B | | |