

Note: Correct responses are based on Java, J2sdk v 6.0, from Sun Microsystems, Inc. All provided code segments are intended to be syntactically correct, unless otherwise stated (i. e. `error type` is an answer choice) and any necessary Java 2 Standard Packages have been imported. Ignore any typographical errors and assume any undefined variables are defined as used.

QUESTION 1

What is the sum of 11101_2 and 10001_2 ?

- A. 65_{10} B. 234_5 C. 59_{10} D. 64_7 E. 63_{10}

QUESTION 2

What is output by the code to the right?

- A. 1 B. 2
C. 5 D. -1
E. There is no output due to a syntax error.

```
int a = 7 % 2 * 4 - 5;
System.out.println(a);
```

QUESTION 3

What is output by the code to the right?

- A. 3.67 B. 3 C. 3.66 D. 3.00
E. There is no output due to a syntax error.

```
double b = 11 / 3.0;
System.out.printf("%.2f",b);
```

QUESTION 4

What is output by the code to the right?

- A. 0 B. -3
C. 2 D. -1
E. There is no output due to a syntax error.

```
int bc = 25;
for(bc = bc / 2; bc > -1; bc += -1){
    bc = bc - 3;
    bc += 1;
}
System.out.print( bc );
```

QUESTION 5

What is output by the code to the right?

- A. -1 B. 2
C. 4 D. 6
E. 3

```
String d = "huh\\\"00\\\"\\4";
System.out.print( d.indexOf( "\\\"") );
```

QUESTION 6

What is output by the code to the right?

- A. 2 B. 5
C. 3 D. 4
E. There is no output due to a runtime exception.

```
long[] ray = {7,11,3,5,9,1};
ray[3] = ray[ray.length-2];
ray[ray.length/2] = ray[3];
System.out.println( ray[2] );
```

QUESTION 7

What is output by the code to the right?

- A. yes B. no
C. false D. true
E. There is no output due to a syntax error.

```
boolean one = false;
boolean two = !!!true;
two = !two;
two = two ^ !one || two;
System.out.println( two );
```

QUESTION 8

What is output by the code to the right?

- A. baman
- B. namab
- C. robin
- D. kavaw
- E. wavak

```
String x = "baman";
String y = "";
for(int i=0; i < x.length(); i++)
{
    char c = x.charAt(i);
    if( i % 2 == 0)
        y += (char)(c - '0' + '9');
    else
        y += c;
}
System.out.println( y );
```

QUESTION 9

What is output by the line marked //1 in the client code to the right?

- A. apl
- B. usc
- C. comp
- D. sci
- E. There is no output due to a syntax error.

```
public class WilezeTrain
{
    protected Color color;

    {
        color = Color.BLUE;
    }

    public WilezeTrain (Color c)    {
        color = c;
    }

    public String getIt()
    {
        if(color.equals(Color.BLUE))
            return "apl";
        if(color.equals(Color.RED))
            return "usc";
        if(color.equals(Color.WHITE))
            return "omp";
        return "sci";
    }
}
```

QUESTION 10

What is output by the line marked //2 in the client code to the right?

- A. apl
- B. usc
- C. comp
- D. sci
- E. There is no output due to a syntax error.

```
////////////////////////////////////
//client code
WilezeTrain w;
w = new WilezeTrain(Color.BLUE);

System.out.println(w.getIt());    //1

w = new WilezeTrain(Color.RED)
    {{ color=Color.GREEN; }};

System.out.println(w.getIt());    //2
```

QUESTION 11

What is output by the code to the right?

- A. 74dog
- B. 11dog
- C. 7dog4
- D. 28dog
- E. dog

```
System.out.println( 7 + 4 + "dog" );
```

QUESTION 12	
What is output by the code to the right? A. A B. B C. C D. D E. There is no output due to a syntax error.	<pre>System.out.printf("%c",68);</pre>
QUESTION 13	
What is output by the code to the right? A. 5 B. 5 6 C. 1 2 3 D. 7 5 3 E. 5 6 java.util.NoSuchElementException	<pre>ArrayList<Integer> li; li = new ArrayList<Integer>(); li.add(7); li.add(1); li.add(5); li.add(2); li.add(6); li.add(3); Iterator<Integer> it = li.iterator(); while(it.hasNext()){ if(it.next() < Math.PI) System.out.print(it.next() + " "); }</pre>
QUESTION 14	
What is output by the client code to the right? A. 36 B. 48 C. 40 D. 91 E. 24	<pre>public static int doh(int cnt) { int val = 0; for(int i=0; i < cnt; i++) for(int j=1; j < cnt / 2; j*=2) val = val + i + j; return val; } ///////////////////////////////////// //client code out.println(doh(6));</pre>
QUESTION 15	
What is output by the code to the right? A. -11 B. 11 C. 4 D. 14 E. 12	<pre>String j = "pythoniskewl"; out.print(j.charAt(3)-j.charAt(7));</pre>
QUESTION 16	
Which of the following <u>could</u> be output by the code to the right? A. 4 B. -1 C. 0 D. A and B only E. A, B, and C	<pre>int deez = //some input value; switch(deez){ case 2 : deez = -1; break; case 3 : deez = 0; case 4 : deez = 7; case 5 : deez = 4; break; } System.out.println(deez);</pre>

<p>QUESTION 17</p> <p>What is the value of <code>a[4]</code> after this code segment is executed?</p> <p>A. 0 B. 12 C. 10 D. 48 E. There is no output due to a runtime error.</p>	<pre>int count = 0; int a[] = {0,11,'0',1,9,5,3,'a'}; for(int i=0;i<a.length;i++) { if(a[i] % 2 == 0) continue; else a[i] = ++a[i]; } for(int i=0;i<a.length;i++) if(a[i] % 2 == 0) count++;</pre>
<p>QUESTION 18</p> <p>What is the value of <code>count</code> after this code segment is executed?</p> <p>A. 7 B. 9 C. 10 D. 8 E. There is no output due to a runtime error.</p>	
<p>QUESTION 19</p> <p>What is output by the code to the right?</p> <p>A. [8, 2, 7, 1, -1, 4, 9, 2, 10] B. [-1, 2, 7, 8, 1, 9, 2, 4, 10] C. [8, 7, 2, -1, 1, 9, 4, 2, 10] D. [10, 7, -1, 2, 1, 4, 9, 2, 8] E. There is no output due to a runtime error.</p>	<pre>ArrayList<Integer> list; list = new ArrayList<Integer>(); list.add(9); list.add(1); list.add(0,3); list.add(5); list.set(0,4); list.add(2); Collections.reverse(list); list.add(0,8); list.add(2); list.set(2,-1); list.add(10); list.add(1,7); System.out.println(list);</pre>
<p>QUESTION 20</p> <p>What is output by the code to the right?</p> <p>A. 7.0 B. 8.0 C. 7 D. 9 E. 9.0</p>	<pre>double dbl = Math.round(Math.sqrt(80)); System.out.print(dbl);</pre>
<p>QUESTION 21</p> <p>What is output by the code to the right?</p> <p>A. 10 B. 12 C. 11 D. 7 E. 13</p>	<pre>System.out.println(11 ^ 7 1 ^ 13);</pre>
<p>QUESTION 22</p> <pre>Integer[] n = {1,3,5,7,9,11,13};</pre> <p>What is returned by <code>go(n)</code>?</p> <p>A. 1 B. 2 C. 3 D. 4 E. 0</p>	<pre>//pre :: n.length > 0 public static int go(Integer[] n) { int x = n[0]; for(int i : n) x &= i; return x; }</pre>
<p>QUESTION 23</p> <pre>Integer[] n = {2,2,2,2,2,3,6,10};</pre> <p>What is returned by <code>go(n)</code>?</p> <p>A. 1 B. 2 C. 3 D. 10 E. 6</p>	

<p>QUESTION 24</p> <p>What is the <i>last</i> integer printed by this code segment?</p> <p>A. 1 B. 2 C. 0 D. -1</p> <p>E. There is not output due to a runtime error.</p>	<pre>int x = 30; while(x-- > 0) { System.out.println(--x); }</pre>
<p>QUESTION 25</p> <p>What is returned by the method call <code>m00h(6)</code> ?</p> <p>A. 3 B. 48 C. 36 D. 0 E. 64</p>	<pre>public static int m00h(int x) { if(x<1) return 1; else return m00h(x-2) * x; }</pre>
<p>QUESTION 26</p> <p>What is returned by the method call <code>m00h(3)</code> ?</p> <p>A. 3 B. 48 C. 36 D. 0 E. 64</p>	
<p>QUESTION 27</p> <p>What replaces <*1> to skip to the end of the for loop?</p> <p>A. skip B. continue</p> <p>C. goto D. jump</p> <p>E. break</p>	<pre>int[][] a = new int[5][5]; int x = 0, y = 0; for(int i = 0; i < 25 && y < 5; i++) { a[y][x] = i; if(y == x) System.out.print(i); if (y == 0) { y = x + 1; x = 0; <*1>; } y--; x++; } System.out.print(a[2][2]);</pre>
<p>QUESTION 28</p> <p>Assuming that <*1> is filled correctly, what is output by the code to the right?</p> <p>A. 023412</p> <p>B. 0412</p> <p>C. 41212</p> <p>D. 01212</p> <p>E. 041212</p>	
<p>QUESTION 29</p> <p>Which of the following could replace <*1> in the code to the right to remove the most recently pushed element of <code>t</code> and return it?</p> <p>A. <code>t.pop()</code></p> <p>B. <code>t.remove(t.size()-1)</code></p> <p>C. <code>t.remove()</code></p> <p>D. A and B</p> <p>E. A, B, and C</p>	<pre>Stack[] s = new Stack[2]; s[0] = new Stack(); s[1] = new Stack(); Stack<Integer> t; int[] a = {5, 3, 2, 7, 10, 11}; t = s[0]; for (int num : a) { t.push(num); } for (int i = 0; i < 10; i++) { int next = (i + 1) % 2 ; while (!t.empty()) { s[next].push(<*1>); } t = s[next]; } out.println(s[0].get(3));</pre>
<p>QUESTION 30</p> <p>What is output by the code to the right assuming <*1> is correctly filled in?</p> <p>A. 2</p> <p>B. 3</p> <p>C. 7</p> <p>D. 5</p> <p>E. There is no output due to a runtime error.</p>	

QUESTION 31

What is output by the line marked `//1` in the code to the right?

- A. `it77`
- B. `7337`
- C. `1013`
- D. `wow`
- E. `//\`

```
String x = "[7337&&1013//\\wow%it77[]";
String[] group = x.split("\\p{Punct}+");
```

QUESTION 32

What is output by the line marked `//2` in the code to the right?

- A. 4
- B. 3
- C. 9
- D. 6
- E. 5

```
System.out.println( group[4] );      //1
System.out.println( group.length ); //2
```

QUESTION 33

```
int[] a = {5,4,3,2,1,1,2,3,4,5};
```

What is returned by `why(a,4)`?

- A. -1
- B. 0
- C. 1
- D. 2
- E. 3

QUESTION 34

```
int[] a = {5,4,5,6,7,8,7,6};
```

What is returned by `why(a,7)`?

- A. -1
- B. 0
- C. 1
- D. 2
- E. 3

```
public static int why(int[] a, int x)
{
    for(int i=x-1;i>=0;i--)
    {
        if(a[i] < a[x])
            return i;
    }
    return -1;
}
```

QUESTION 35

What is the **best** case bigO for method `why`? Choose the most restrictive answer.

- A. $O(n)$
- B. $O(n/2)$
- C. $O(1)$
- D. $O(n-1)$
- E. $O(\log 2n)$

QUESTION 36

Assume that method `superSort(Object[] objs)` is $O(N)$ where $N = \text{obj.length}$. When method `superSort` is passed an Object array of length 10000 it takes 0.50 seconds for method `superSort` to complete. If method `superSort` is passed an Object array of length 20000, how many seconds would it take `superSort` to complete?

- A. 1.00
- B. 1.50
- C. 2.00
- D. 4.00
- E. 3.00

QUESTION 37

What is the output of the following client code?

```
ABird tweetee = new ABird();
tweetee.dance();
```

- A. 0
- B. 1
- C. 2
- D. 3
- E. There is no output due to a compile error.

```
public class ABird {
    int x;
    public ABird() {
        x = 0;
    }

    public ABird(int x) {
        this.x = x;
    }

    public void dance() {
        System.out.println(++x);
    }
}
```

QUESTION 38

What is the output of the following client code?

```
ABird tweetee = new Bomby(5, 3);
tweetee.freestyle();
```

- A. 0
- B. 1
- C. 2
- D. 3
- E. There is no output due to a compile error.

```
public class Bomby extends ABird{
    int x;
    int y;
    public Bomby(int x) {
        this.x = x;
    }

    public Bomby(int x, int y) {
        super(x);
        this.y = y;
    }

    public void dance(){
        out.println(x+" "+super.x);
    }
    public void freestyle(){
        out.println(x * 2+" " + super.x / 2);
    }
}
```

QUESTION 39

What is the output of the following client code?

```
Bomby tweetee = new Bomby(5, 3);
tweetee.dance();
```

- A. 0 1
- B. 0 5
- C. 5 5
- D. 0 10
- E. There is no output due to a runtime error.

```
public class Boomer extends Bomby{
    int y;
    public Boomer(int x, int y) {
        super(x, ++y);
    }

    public void dance(){
        out.println(y+" "+super.y);
    }
}
```

QUESTION 40

What is the output of the following client code?

```
Bomby tweetee = new Boomer(2, 9);
tweetee.dance();
```

- A. 0 1
- B. 0 5
- C. 5 5
- D. 0 10
- E. There is no output due to a runtime error.