

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` 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.

<p>QUESTION 1</p> <p>$333_4 + 222_3 + 111_2 = ?$</p> <p>A. 10110_2 B. 96_{10} C. 48_8 D. 98_{10} E. 666_9</p>	
<p>QUESTION 2</p> <p>What is output by the code to the right?</p> <p>A. 8 B. 15 C. 17 D. 16 E. 12</p>	<pre>int a = 16; a = a++; out.println(a);</pre>
<p>QUESTION 3</p> <p>What is output by the code to the right?</p> <p>A. 2.2d B. 2.0 C. 2.0f D. 1.0f E. There is no output due to a syntax error.</p>	<pre>Double b = 1.0f; b += 1.0; out.println(b);</pre>
<p>QUESTION 4</p> <p>How many lines of output are printed in the code to the right?</p> <p>A. 2079 B. 1000 C. 950 D. 1050 E. 0</p>	<pre>for(int c=1; c<=99; c+=2) for(int k=0;k<=20;k++) out.println("P=NP");</pre>
<p>QUESTION 5</p> <p>What is output by the code to the right?</p> <p>A. 8 B. 16 C. 32 D. 64 E. 9</p>	<pre>out.print(Character.SIZE);</pre>
<p>QUESTION 6</p> <p>What is output by the code to the right?</p> <p>A. true B. false C. rofl D. 0 E. 1</p>	<pre>boolean whomikejones = true; whomikejones = !whomikejones; out.println(whomikejones && true);</pre>
<p>QUESTION 7</p> <p>What is output by the code to the right?</p> <p>A. true>true B. true>false C. false>true D. false>false E. definitely/maybe</p>	<pre>boolean jack = true; boolean jill = false; jack = jack^jill; jill = jack^jill; jack = jack^jill; jack = jack^jill; jill = jack^jill; jack = jack^jill; System.out.println(jack+""+jill);</pre>
<p>QUESTION 8</p> <p>What is output by the code to the right?</p> <p>A. 1011 B. 1110 C. 1001 D. 1100 E. 1000</p>	<pre>out.println(055+550+505);</pre>

<p>QUESTION 9</p> <p>What is output by the code to the right?</p> <p>A. Sa B. Sam C. mmich D. mich E. m?mich</p>	<pre>String var = "Sam?mich"; int ind = var.lastIndexOf("m",3); var=var.substring(ind); out.println(var);</pre>
<p>QUESTION 10</p> <p>What is output by the code to the right?</p> <p>A. 33554432 B. 27 C. 16777216 D.18 E. 30</p>	<pre>out.println(2 ^ 25);</pre>
<p>QUESTION 11</p> <p>What is output by the code to the right?</p> <p>A. C B. - C. S D. CMU-SCS E. -SC</p>	<pre>String app = "This is an easy test"; switch(app.charAt(5)) { case 'i': out.print("C"); case 'T': out.print("M"); case 'J': out.print("U"); case 'l': out.print("-"); case 'n': out.print("S"); case 'e': out.print("C"); default: out.print("S"); }</pre>
<p>QUESTION 12</p> <p>What is output by the code to the right?</p> <p>A. 20.0 B. 21.0 C. 20.5 D. 20.6 E. 21</p>	<pre>double liang = 20.55; out.printf("%-3.1f",liang);</pre>
<p>QUESTION 13</p> <p>Which of the following to the right will compile?</p> <p>A. I, V B. II, III, V C. I, II D. I, III, V E. I, III, IV, V</p>	<pre>I. int[][] a = new int[4][4]; II. int[][] a = new int[][]; III. int a[][] = new int[4][4]; IV. int[][] a = new int[4]; V. int[][] a = new int[4][];</pre>
<p>QUESTION 14</p> <p>What of the following cannot replace <*1> in the code to the right?</p> <p>A. new Integer(5) B. "crazekangaroo" C. 5 D. new Scanner("chinatown"); E. None of these will cause an error</p>	<pre>TreeSet set = new TreeSet(); set.add(<*1>);</pre>

QUESTION 15

What is returned by `go(4, 2)`?

- A. 4
- B. 5
- C. 6
- D. 8
- E. 15

```
public static int go(int n, int bits)
{
    int ret=0;
    for(int i=0;i<(1<<n);i++)
    {
        int count=0;
        for(int k=0;k<n;k++)
        {
            if((i & (1<<k)) > 0)
            {
                count++;
            }
        }
        ret+=(bits==count)?1:0;
    }
    return ret;
}
```

QUESTION 16

What replaces `<*1>` and `<*2>` respectively?

- A. put and insert
- B. add and insert
- C. add and enqueue
- D. push and offer
- E. prescribe and polymerase

```
Stack<Integer> s = new Stack<Integer>();
Queue<Integer> pq = new PriorityQueue();

for(int i=0;i<10;i++)
{
    if( i * i % 3 % 2 == 0 )
        s.<*1>( i );

    pq.<*2>( 10-i-1 );
}
```

QUESTION 17

What is output by the code to the right?

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4

```
int crhscs = 0;
PriorityQueue old = (PriorityQueue)pq;

for( int k : s )
{
    if( pq.size() != 0
        && pq.poll() == k )
        crhscs++;

    pq = new PriorityQueue(old);
}
out.println(crhscs);
```

QUESTION 18

What is output by the code to the right?

- A. 5 B. 6 C. 7 D. 8
- E. There is no output

```
int v = 5;
boolean k = ( v++ > 5) && ( v++ > 5);

if(!k)
    out.println(v);
```

QUESTION 19

What is output by the code to the right?

- A. true B. false C. 1 D. 0
- E. There is no output due to a `InputMismatchException`

```
String soljaragz = "uil";
soljaragz += "#"+"1";
out.println( soljaragz.equals(
    ("UIL#1").toLowerCase() ));
```

QUESTION 20

What is output by the code to the right?

- C. Bing Vivicat
- C. Bing Stephen
- C. Stephen Vivicat
- D. Stephen hassaN
- C. kurotsutsikage Stephen

```
ArrayList<String> RIFKNAI = new
ArrayList<String>();
RIFKNAI.add("Peter rabbit");
RIFKNAI.add(0,"Bing");
RIFKNAI.set(1,"Vivicat");
RIFKNAI.add("Stephen");
RIFKNAI.add("hassaN");
RIFKNAI.add("Yichi");
RIFKNAI.add("kurotsutsikage");
RIFKNAI.add(RIFKNAI.size()/2,
RIFKNAI.remove(2));

out.print(RIFKNAI.get(3));
Collections.sort( RIFKNAI );
Collections.reverse( RIFKNAI );
out.print(" "+RIFKNAI.get(3));
```

QUESTION 21

What is the Big O of the code to the right?

- A. O(N)
- B. O(3N)
- C. O(N^2)
- D. O(N^3)
- E. O(3^N)

//pre-condition: d is an adjacency matrix with the property that d[i][j] stores the weight between nodes i and j.

```
public static void floyd(int[][] d)
{
    int n = d.length;
    for(int j=0;j<n;j++)
        for(int i=0;i<n;i++)
            for(int k=0;k<n;k++)
                d[i][k] = Math.min(d[i][k],
                d[i][j]+d[j][k]);
}
```

QUESTION 22

What is output by the client code to the right?

- A. [5, 0, 2]
- B. [1, 2, 0]
- C. [5, 0, 1]
- D. [3, 0, 2]
- E. [3, 0, 1]

```
//client code
int[][] arr =
{{0,5,1},
 {5,0,2},
 {1,2,0}};

floyd(arr);
out.println(Arrays.toString(arr[1]));
```

QUESTION 23

What is the output?

- A. true true
- B. true false
- C. false true
- D. false false
- E. Nothing there is a runtime error on line //2

```
String s1 = "Howdy"; //1

String s2 = new String("Howdy"); //2

out.print(s1.equals(s2)+" "+s1==s2); //3
```

QUESTION 24

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

- A. 1
- B. 3
- C. 4
- D. 7
- E. 11

```
public static void main(String[] args) {
    int[] val = {1,5,10,25,50};
    out.println( joy(val,17) ); //line 1
    out.println( fun(val,17) ); //line 2
}
```

```
public static int joy(int[] val, int s)
{
    int ind = val.length-1;
    int count = 0;
    while(true)
    {
        if(val[ind]<=s)
        {
            s-=val[ind];
            count++;
        }
        else
            ind--;
        if(ind<0)
            break;
    }
    return count;
}
```

QUESTION 25

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

- A. 1
- B. 3
- C. 4
- D. 7
- E. 11

```
public static int fun(int[] val, int s)
{
    int[] dp = new int[s+1];
    Arrays.fill(dp,Integer.MAX_VALUE);
    dp[0]=0;
    for(int i=1;i<=s;i++)
    {
        for(int k=0;k<val.length;k++)
        {
            if(val[k]<=i)
            {
                dp[i] = Math.min(
                    dp[ i-val[k] ] + 1, dp[i]);
            }
        }
    }
    return dp[s];
}
```

QUESTION 26

What will happen when the following code is compiled and executed?

```
HashMap hm = new HashMap(); //1
hm.put(7, "seven"); //2
```

- A. There will be a syntax error on line 1. It should instead read: `HashMap<Object> hm = new HashMap<Object>();` to compile properly.
- B. There will be a syntax error on line 2 because the correct method is `add()` not `put()`.
- C. The code compiles, but line 1 causes a runtime exception since no parameters are passed to the constructor.
- D. A and B
- E. It will compile and execute without error.

QUESTION 27

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

- A. wu
- B. tang
- C. juve
- D. gel
- E. ^*

```
String wu = "wu$tang^*gel?juve";
String[] arr = wu.split("\\W");
out.println(arr[3]); //line 1
```

QUESTION 28

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

- A. wutang
- B. wutanggaljuve
- C. wujuve
- D. wu\$tang
- E. nothing will be outputted

```
for( String s: arr )
{
    if(s.matches("[wt].*"))
        out.print(s); //line 2
}
```

QUESTION 29

What replaces `<*1>` in the code to the right so that the constructor will work as intended?

- A. `funds = getFunds();`
- B. `funds = funds;`
- C. `funds = this.funds;`
- D. `this.funds = funds;`
- E. `this.funds = this.funds;`

```
public class CRHSCS
{
    int funds;
    public CRHSCS( int funds )
    {
        <*1>
    }
    public void raise()
    {
        funds = <*2> Math.pow(funds, 2);
    }
}

//client code
CRHSCS t = new CRHSCS(2);
t.raise();
t.raise();
t.raise();
out.println(t.funds);
```

QUESTION 30

What replaces `<*2>` in the code to the right so that it will compile?

- A. `(cast)`
- B. `int`
- C. `(int)`
- D. `(double)`
- E. `<int>`

QUESTION 31

What is output by the code to the right?

- A. 8
- B. 128
- C. 246
- D. 256
- E. 16

QUESTION 32

What is output by the code to the right?

- A. MAXFLOWBEEP
- B. MAXFLOWMAXFLOW
- C. BEEPMAXFLOW
- D. ROB KOLSTAD???
- E. There is no output due to a ClassCastException

```
class Human
{
    public void talk()
    {
        out.print("BEEP");
    }
}
class Topcoder extends Human
{
    public void talk()
    {
        out.print("MAXFLOW");
    }
}

//client source code
Human petr = new Topcoder();
petr.talk();
Human tomek = (Human)petr;
tomek.talk();
```

QUESTION 33

What replaces `<*1>` in the code to the right so that it will compile?

- A. [String, Double]
- B. <String, Double>
- C. (String, Double)
- D. [String][Double]
- E. {String, Double}

QUESTION 34

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

- A. 1.0
- B. 1.5
- C. 1.25
- D. 0.1428
- E. There is no output due to a compile error.

QUESTION 35

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

- A. [0.75, 1.0, 3.14159, 1.5]
- B. [1.5, 1.0, 0.75, 1.25, 3.14159]
- C. [1.0, 0.75, 1.25, 3.13159]
- D. [1.25, 3.14159, 1.0, 0.75]
- E. [0.75, 1.0, 3.14159, 1.25]

QUESTION 36

Which of the following replaces `<*1>` in the test code to the right so that it will jump to the end of the while loop, but will not exit it.

- A. next
- B. break
- C. goto
- D. continue
- E. end

QUESTION 37

What is the value of `dist` after `beta(weight, 0)` is called?

`//assuming weight[][] is:`

0	5	1
5	0	2
1	2	0

- A. [0, 3, 1]
- B. [1, 2, 5]
- C. [5, 2, 1]
- D. [0, 1, 3]
- E. [0, 1, 2]

```
Map<*1> lanparty;
lanparty = new TreeMap<*1>();
lanparty.put("pizza", 1.5);
lanparty.put("drinks", 1.0);
lanparty.put("candy", 0.75);
lanparty.put("pizza", 1.25);
lanparty.put("pi", 3.14159);

out.println(lanparty.get("pizza")); //1
out.println(lanparty.values()); //2
```

```
static void beta(int[][] weight, int tg)
{
    int n = weight.length, count = 0;
    boolean[] visited = new boolean[n];
    int[] dist = new int[n];
    Arrays.fill( dist, 9999 );
    dist[tg] = 0;

    while(count < n)
    {
        int minvalue = 9999, m=-1;
        for(int i=0;i<n;i++)
        {
            if(visited[i])
                <*1>;

            if(dist[i]<minvalue)
            {
                minvalue=dist[i];
                m=i;
            }
        }
        visited[m]=true;
        for(int j=0;j<n;j++)
        {
            if(dist[m]+weight[m][j]<dist[j])
            {
                dist[j]=dist[m]+weight[m][j];
            }
        }
        count++;
    }
}
```

QUESTION 38

What is the value of dist after beta(weight, 3) is called?

//assume e is 9999 and weight[][] is:

0	e	5	8	e	e
e	0	e	3	6	2
5	e	0	2	3	e
8	3	2	0	e	7
e	6	3	e	0	e
e	2	e	7	e	0

- A. [8, 3, 2, 0, 9999, 7]
- B. [7, 3, 2, 0, 5, 5]
- C. [0, 2, 2, 7, 3, 0]
- D. [7, 3, 2, 0, 0, 5]
- E. [0, 2, 7, 5, 9999, 5]

QUESTION 39

What is the Big(O) of the code to the right in respect to n, where n x n is the dimensions of the weight array?

- A. O(N)
- B. O(3N)
- C. O(N²)
- D. O(N³)
- E. O(N log N)

```
static void beta(int[][] weight, int tg)
{
    int n = weight.length, count = 0;
    boolean[] visited = new boolean[n];
    int[] dist = new int[n];
    Arrays.fill( dist, 9999 );
    dist[tg] = 0;

    while(count<n)
    {
        int minvalue = 9999, m=-1;
        for(int i=0;i<n;i++)
        {
            if(visited[i])
                <*1>;

            if(dist[i]<minvalue)
            {
                minvalue=dist[i];
                m=i;
            }
        }
        visited[m]=true;
        for(int j=0;j<n;j++)
        {
            if(dist[m]+weight[m][j]<dist[j])
            {
                dist[j]=dist[m]+weight[m][j];
            }
        }
        count++;
    }
}
```

QUESTION 40

What is returned by assault(27, 37)?

- A. 10
- B. 27
- C. 64
- D. 999
- E. 3367

```
public int dust(int a, int b)
{
    if(b==0)
        return a;
    return dust(b,a*b);
}

public int assault(int a, int b)
{
    return a*b*dust(a,b);
}
```