

Note: Correct responses are based on Java, **J2sdk v 1.7.25**, 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. **For all output statements, assume that the `System` class has been statically imported...** *`import static java.lang.System.*;`*

**QUESTION 1**

What is  $239_{10}$  plus  $A_{16}$  ?

- A.  $251_{10}$                       B.  $11111001_2$                       C.  $255_{10}$                       D.  $F8_{16}$                       E.  $11100010_2$

**QUESTION 2**

What is output by the code to the right?

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

```
int x = 13, y = 95;
int z = y/x - y%x;
out.println(z);
```

**QUESTION 3**

What is output by the code to the right?

- A. "0.333"  
0123456789  
B. 0.333  
0123456789  
C. 0.33333333  
0123456789  
D. "0.333333"  
0123456789  
E. "0.333"  
0123456

```
out.printf
("%%.3f\\n%s",1/3.0,"0123456789");
```

**QUESTION 4**

What is output by line <\*1> in the code on the right?

- A. NQUES                      B. QUES                      C. OPENQUESTION  
D. NQUE                      E. QUEST

**QUESTION 5**

Which of the following correctly replaces <\*2> in the code in order to print `false`?

- A. `st.charAt(0)>'P' && st.charAt(x-1)<'T' || x%2==1`  
B. `st.charAt(0)>'P' && (st.charAt(x-1)<'T' || x%2==1)`  
C. `st.charAt(0)>'P' || st.charAt(x-1)<'T' || x%2==1`  
D. `st.charAt(0)>'P' && st.charAt(x-1)<'T' && x%2==1`  
E. `st.charAt(0)>'P' || st.charAt(x-1)<'T' && x%2==1`

```
String st = "OPENQUESTION";
st = st.substring(4,8);
out.println(st); //<*1>
int x =st.length();
out.println(<*2>);
```

**QUESTION 6**

Which of the following could be outputted by the code to the right?

- I. -6
- II. 16
- III. 10

- A. I only
- B. III only
- C. I & II
- D. I & III
- E. I, II, & III

```
int x = (int) (Math.random()*17)-6;
out.println(x);
```

**QUESTION 7**

What is output by the code to the right?

- A. 54
- B. 45
- C. 270
- D. 10
- E. 330

```
int sum = 0;
for(int i = 0; i < 10; i++)
    sum += i * 6;
out.println(sum);
```

**QUESTION 8**

Which of the following correctly replaces <\*1> in the code in order to print the?

- A. "EIOUA"                      B. "UAEIO"
- C. "OUAEI"                    D. "AEIOU"
- E. "IOUAE"

```
String x = "", word = <*1>;
switch(word.charAt(3))
{
    case 'A': x = "enough"; break;
    case 'O': x = "the";      break;
    case 'I': x = "just";     break;
    case 'U': x = "thing";    break;
    case 'E': x = "is";       break;
}
out.println(x);
```

**QUESTION 9**

What is output by the code to the right?

- A. 5811141721242730
- B. 5579111315179
- C. 011030360
- D. 011025147
- E. 011111111

```
int x = 5;
for(int i=1; i<10; i++)
{
    x = (x+3)%i;
    out.print(x);
}
```

**QUESTION 10**

What is output by the code to the right?

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

```
int[] list = {6, 4, 3, 1, 0, 2};
out.print(list[list[1]]);
```

**QUESTION 11**

Which of the following values can be inputted thru the method `nextDouble()`?

I. 4.6

II. 4

III. "4.6"

A. I & II

B. III only

C. I & III

D. I only

E. I, II, & III

**QUESTION 12**

What is output by the code to the right?

- A. 67
- B. 89
- C. 72
- D. 50
- E. 17

```
int x =17;
for(int i=2; i<20; i+=4)
    x+=i;
out.println(x);
```

**QUESTION 13**

What is order of precedence for the operations on the right from highest precedent to lowest precedent?

- A. II, I, V, III, IV
- B. III, II, I, V, IV
- C. III, IV, I, V, II
- D. III, II, V, I, IV
- E. IV, III, V, I, IV

- I. !=
- II. +=
- III. %
- IV. <<
- V. &&

**QUESTION 14**

What is the memory size of the char primitive data type?

- A. 16-bit signed two's compliment
- B. 16-bit unicode
- C. 8-bit signed two's compliment
- D. 64-bit IEEE floating point
- E. 32-bit IEEE floating point

**QUESTION 15**

What is output by the code to the right?

- A. [4, 5, 2, 3, 1];
- B. [2, 5, 4, 3, 1];
- C. [5, 2, 4, 3, 1];
- D. [5, 4, 2, 3, 1];
- E. There is no output due to a run-time error

```
ArrayList<Integer> list;
list = new ArrayList<>();

for(int i=1; i<=5; i++)
    list.add(i);

int x = 0;
int y = list.size();

while(y>0)
{
    Integer temp = list.get(y-1);
    list.set(y-1, list.get(x));
    list.set(x, temp);
    x = (x+7)%y;
    y--;
}
out.println(list);
```

**QUESTION 16**

Which of the following correctly replaces <\*1> in the code to the right such that par is instantiated?

- A. `Par par = new Par("Say what you want");`
- B. `Par par = "Say what you want";`
- C. `Par par = new Par();`
- D. `Par par = Par("Say what you want");`
- E. more than one of these are correct

**QUESTION 17**

Which of the following code will replace <\*2> in the code to the right such that the last word is printed?

- A. `out.println(words[words.length-1]);`
- B. `out.println(toString(par.count()-1));`
- C. `out.println(words[par.count()-1]);`
- D. `out.println(par.tao(par.count()-1));`
- E. more than one of these are correct

```
class Par
{
    private String words[];

    public Par (String str)
    {
        words = str.split(" ");
    }

    public int count()
    {
        return words.length;
    }

    public String tao(int i)
    {
        return words[i];
    }

    public String toString()
    {
        String line = "";
        for(String x:words)
            line+=x+"-";
        return line;
    }
}
```

```
////////////////////////////////////
//CLIENT CODE //////////////////////////////////
Par par = <*1>;
out.println(<*2>;
```

**QUESTION 18**

What is output by line <\*1> in the code on the right?

- A. e
- B. p
- C. k
- D. space
- E. t

```
String str = "Meet at the park";
char[][] mat = new char[4][4];
int x=0;
for(int i=0; i<mat.length; i++)
    for(int j=0; j<mat.length; j++)
        mat[i][j]=str.charAt(x++);
out.println(mat[3][0]); //<*1>
str = "";
for(int i=0; i<mat.length; i++)
    for(int j=0; j<mat.length; j++)
        str+=mat[j][i];
out.println(str); //<*2>
```

**QUESTION 19**

What is output by line <\*2> in the code to the right?

- A. M tpeahtaetert k
- B. M teahetet
- C. Maeketp eta thr
- D. Meetatthepark
- E. Meet at the park

**QUESTION 20**

What is output by the code to the right?

- A. 0x101010100011111101
- B. 2a8fc
- C. afc
- D. 0x1010111111110
- E. aa2f0

```
int age = 42;
int wt = 35;
int ht = 60;
int pack = age << 6 | wt << 6 | ht;
out.printf("%x",pack);
```

**QUESTION 21**

What is stored in list after the method call `myst(x)` if `x` was defined as `String[] x = {"dzv", "daf", "czb", "sta", "dib"}?`

- A. ["sta", "dib", "czb", "dzv", "daf"]
- B. ["czb", "daf", "dib", "dzv", "sta"]
- C. ["sta", "dzv", "dib", "daf", "czb"]
- D. ["dzv", "daf", "czb", "sta", "dib"]
- E. ["czb", "dzv", "daf", "sta", "dib"]

```
public void myst(String[] list)
{
    int j=0;
    for(int i=0; i<list.length; i++)
        if(list[j].compareTo(list[i])<0)
        {
            String temp = list[j];
            list[j] = list[i];
            list[i] = temp;
            j++;
        }
}
```

**QUESTION 22**

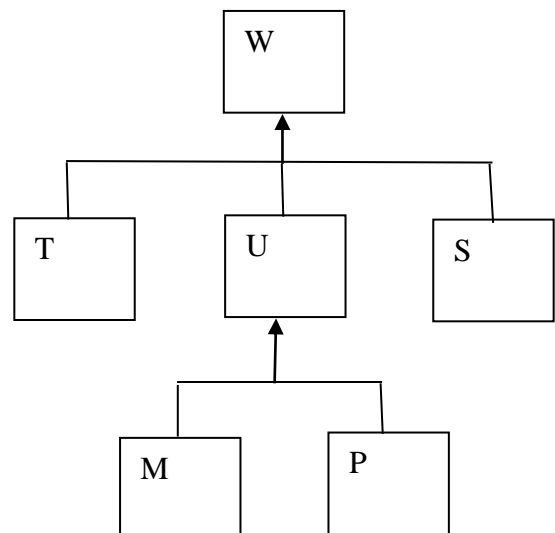
What could be stored in `x` such that the method to the right does not alter `x`?

- A. The list is in alphabetical order
- B. The first word is alphabetically first
- C. The first word is alphabetically last
- D. The size of the list is even
- E. The list is never altered by the method

**QUESTION 23**

What can be discerned from the basic UML inheritance diagram to the right?

- A. M is a S
- B. P is a W
- C. U is a T
- D. W is a S
- E. none of these choices are correct



**QUESTION 24**

Which of the following correctly replaces <\*1> and <\*2> in the code to the right?

- |                                       |           |
|---------------------------------------|-----------|
| <*1>                                  | <*2>      |
| A. color = c;                         | type = t; |
| B. type = t;                          | super(c); |
| C. super(c);                          | type = t; |
| D. new Candy(c);                      | type = t; |
| E. more than one of these are correct |           |

**QUESTION 25**

Which of the following correctly replaces <\*3> in the code to the right?

- A. return type + super;  
 B. return t + super.toString();  
 C. return type + super.toString();  
 D. return t + c;  
 E. more than one of these are correct

**QUESTION 26**

What is output by the code on the right?

- A. RedRedZingBlueBoom  
 B. RedRedRedZingBlueBlueBoom  
 C. RedRedRedBoomBlueBlueZing  
 D. RedRedBoomBlueZing  
 E. There is no output due to a syntax error

```
class Candy
{
    private String color;

    public Candy(String c)
    {
        color = c;
    }

    public String getColor()
    {
        return color;
    }

    public String toString()
    {
        return "Candy "+color;
    }
}

class Bonus extends Candy
{
    private String type;

    public Bonus(String c, String t)
    {
        <*1>
        <*2>
    }

    public String getBonus()
    {
        return type;
    }

    public String toString()
    {
        <*3>
    }
}

//////////CLIENT CODE//////////
Candy[] bar = new Candy[5];
bar[0]=new Candy("Red");
bar[1]=new Candy("Red");
bar[2]=new Bonus("Red","Str");
bar[3]=new Candy("Blue");
bar[4]=new Bonus("Blue","Wrp");

for(int i=0; i<bar.length; i++)
    if(bar[i] instanceof Bonus)
        if(bar[i].getType().equals("Str"))
            out.print("Zing");
        else
            out.print("Boom");
    else
        out.print(bar[i].getColor());
```

**QUESTION 27**

What is output by the code on the right?

- A. 3345
- B. 1223
- C. 1234
- D. 1112
- E. There is no output due to a syntax error

```
Queue<Integer> stuff;
stuff = new LinkedList<>();
stuff.add(1);
stuff.add(2);
stuff.add(3);
out.print(stuff.element());
out.print(stuff.peek());
stuff.offer(4);
out.print(stuff.remove());
stuff.offer(5);
out.print(stuff.poll());
```

**QUESTION 28**

What is returned by the method call `myst(3, 2)`?

- A. 1
- B. 6
- C. -5
- D. 5
- E. infinite recursion

```
public static int myst(int x, int y)
{
    if(x>0)
        return 1+myst(x-1,y);
    else if(y>0)
        return -1+myst(x,y-1);
    return 0;
}
```

**QUESTION 29**

What is returned by the method call `myst(-163, 421)`?

- A. -421
- B. 584
- C. 68623
- D. 258
- E. infinite recursion

**QUESTION 30**

Which of the following correctly replaces `<*3>` in the code to the right such that the value 73 is outputted?

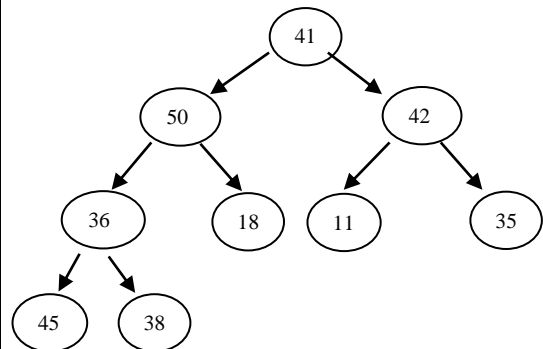
- A. 99
- B. 2
- C. 32
- D. 41
- E. 105

```
x = <*1>;
System.out.println(x^32);
```

**QUESTION 31**

What would be printed out if a pre-order traversal is used on the tree to the right?

- A. 35 44 11 41 18 50 38 36 45
- B. 11 18 35 36 38 41 42 45 50
- C. 45 38 36 18 50 11 35 42 41
- D. 41 50 36 45 38 18 42 11 35
- E. 41 50 42 36 18 11 35 45 38



**QUESTION 32**

What is output by the code on the right?

- A. [aire, ul, nny, lby, d]
- B. [Cl, Pa, Je, Co, Re]
- C. [Claire, Paul, nny]
- D. [Jenny, Colby, Red]
- E. There is no output due to a run-time error

```
Stack<String> st;
st = new Stack<String>();
st.add("Claire");
st.add("Paul");
st.add("Jenny");
st.add("Colby");
st.add("Red");
int i=0;
while(i<10)
{
    String x = st.pop();
    x = x.substring(1);
    if(!x.isEmpty())
        st.push(x);
    i++;
}
out.println(st);
```

**QUESTION 33**

What is the first five Strings in set after the code on the right is run?

- A. [aee, aee, aet, aet, ate]
- B. [tea, tee, tae, tae, tee]
- C. [aee, aet, aee, aet, ate]
- D. [tea, tee, tae, eta, ete]
- E. [aee, aet, ate, eae, eat]

```
String w;
Set<String> set = new TreeSet<>();
char[] c={'t','e','a','e'};
for(int i=0; i<c.length; i++)
    for(int j=0; j<c.length; j++)
        if(i!=j)
            for(int k=0; k<c.length; k++)
                if(k!=i && k!=j)
                {
                    w = ""+c[i]+c[j]+c[k];
                    out.println(w);
                    set.add(w);
                }
```

**QUESTION 34**

What is the size of set after the code on the right is run?

- A. 64
- B. 8
- C. 12
- D. 24
- E. 32

**QUESTION 35**

What is output by the code on the right?

- A. 1
- B. 6
- C. 4
- D. 5
- E. 3

```
String word = "aeiaeiouiaeiouauaio";
String[] list = word.split("a");
out.print(list.length);
```

**QUESTION 36**

Simplify the Boolean algebra statement on the right

- A.  $A + !B$
- B.  $!(A + !B)$
- C.  $!A * B$
- D.  $A * !B$
- E.  $!(A * !B)$

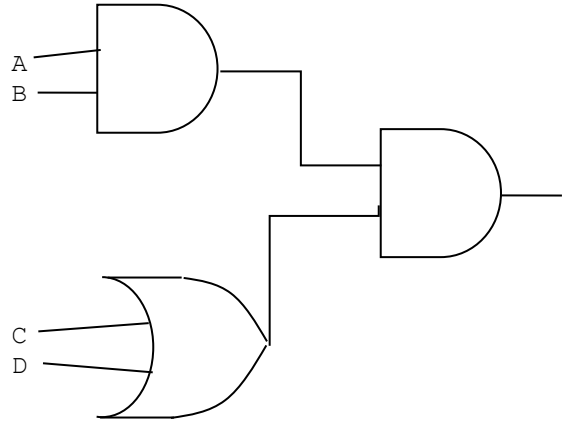
$!(A + B)$



**QUESTION 37**

How many ordered quadruples make the code to the right TRUE?

- A. 4
- B. 12
- C. 3
- D. 16
- E. 1

**QUESTION 38**

Convert the infix notation equation to the right into a postfix notation equation.

- A.  $DB + FEC - * DAB * - * /$
- B.  $+ DB * FEC - / D * AB - *$
- C.  $/ - * BFEC * - DAB * + D$
- D.  $DBFEC / - * DAB * - * +$
- E.  $+ * * B - F / EC - * ABDD$

$$D + B * (F - E / C) * (D - A * B)$$

**QUESTION 39**

*OPEN ENDED QUESTION – Find the answer and write it on your answer sheet. If you are using a ScanTron form, write the question number and the answer on the bottom of the ScanTron.*

What is the decimal value of the number to the right if it is being stored as a signed byte data type?

 $10101110_2$ 
**QUESTION 40**

*OPEN ENDED QUESTION – Fill in the blank spaces with the proper bits (1 or 0) and write it on your answer sheet. If you are using a ScanTron form, write the question number and the answer on the bottom of the ScanTron.*

Evaluate the expression to the right.

bit      bit      bit      bit      bit      bit      bit      bit

--	--	--	--	--	--	--	--

 $(LCIRC-5(RSHIFT-4\ 11011010))$