

## AP COMPUTER SCIENCE A – QUIZ 6 STUDY GUIDE

7) What is the output of the code segment?

```
int i=0b10011001;  
System.out.println(i);
```

*Ans.*  
153

8) What is the output of the code segment?

```
int j=0274;  
System.out.println(j);
```

*Ans.*  
188

9) What is the output of the code segment?

```
int k=0xb7;  
System.out.println(k);
```

*Ans.*  
183

10) What is the output of the code segment?

```
int i=200;  
System.out.println( "0b" + Integer.toBinaryString(i) );
```

*Ans.*  
0b11001000

11) What is the output of the code segment?

```
int j=200;  
System.out.println( "0" + Integer.toOctalString(i) );
```

*Ans.*  
0310

12) What is the output of the code segment?

```
int k=200;  
System.out.println( "0x" + Integer.toHexString(i) );
```

*Ans.*  
0xc8

## AP COMPUTER SCIENCE A – QUIZ 6 STUDY GUIDE

Problems **13** through **15** concern pixel colors in the `BufferedImage.TYPE_INT_RGB` format.

**13)** What color does `0xffff00` represent?

*Ans.*

yellow

**14)** What color does `0xff00ff` represent?

*Ans.*

magenta

**15)** What color does `0x00ffff` represent?

*Ans.*

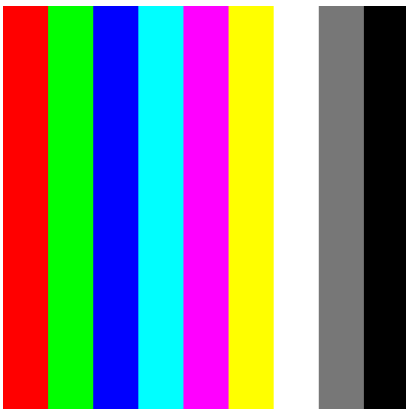
cyan

**16)** Describe the image which is produced by the code segment.

```
BufferedImage bi=new BufferedImage(450,450,BufferedImage.TYPE_INT_RGB);
for ( int y=0; y<450; ++y ) {
    for ( int x= 0; x< 50; ++x ) bi.setRGB(x,y,0xff0000);
    for ( int x= 50; x<100; ++x ) bi.setRGB(x,y,0x00ff00);
    for ( int x=100; x<150; ++x ) bi.setRGB(x,y,0x0000ff);
    for ( int x=150; x<200; ++x ) bi.setRGB(x,y,0x00ffff);
    for ( int x=200; x<250; ++x ) bi.setRGB(x,y,0xff00ff);
    for ( int x=250; x<300; ++x ) bi.setRGB(x,y,0xffff00);
    for ( int x=300; x<350; ++x ) bi.setRGB(x,y,0xffffffff);
    for ( int x=350; x<400; ++x ) bi.setRGB(x,y,0x777777);
    for ( int x=400; x<450; ++x ) bi.setRGB(x,y,0x000000);
}
```

*Ans.*

A 450×450 image with vertical stripes, each 50 pixels wide, from left to right, of colors red, green, blue, cyan, magenta, yellow, white, grey and black, *i.e.*,



## AP COMPUTER SCIENCE A – QUIZ 6 STUDY GUIDE

**17)** What is the order of the number of operations required to sort a list of length  $n$  with a merge sort?

*Ans.*

$n \log n$

**18)** What is the order of the number of operations required to sort a list of length  $n$  with a selection sort (e.g., a min-sort)?

*Ans.*

$n^2$

**19)** What is the output of the program?

```
public class Merge {
    /**/
    public static void main ( String [] arg ) {
        /**/
        int [] a=new int [] { 4 , 17 , 28 , 63 };
        int [] b=new int [] { 7 , 16 , 33 , 37 , 83 };
        /**/
        int lenA=a.length;    int lenB=b.length;
        int lenC=lenA+lenB;
        int [] c=new int [lenC];
        /**/
        int aC, bC, cC;
        aC=0; bC=0; cC=0;
        for ( int i=0; i<lenC; ++i ) {
            if ( ( aC < lenA ) && ( bC < lenB ) ) {
                if ( a[aC] < b[bC] ) c[cC++]=a[aC++];
                else                c[cC++]=b[bC++];
            }
            else if ( bC < lenB ) c[cC++]=b[bC++];
            else                c[cC++]=a[aC++];
        }
        /**/
        FileOutput fo=new FileOutput();
        for ( int i=0; i<lenC; ++i ) fo.println("%2d",c[i]);
        /**/
        return;
    }
}
```

*Ans.*

4  
7  
16  
17  
28  
33  
37  
63  
83

**20) What is the output of the program?**

```
public class BooleanStuff {  
    /**/  
    public static void main ( String [] arg ) {  
        /**/  
        boolean [] a=new boolean [] { true , true , false , false };  
        boolean [] b=new boolean [] { true , false , true , false };  
        boolean c;  
        /**/  
        System.out.println("a b c");  
        System.out.println("-----");  
        /**/  
        for ( int i=0; i<4; ++i ) {  
            c = ( a[i] && !b[i] ) || ( !a[i] && b[i] );  
            System.out.println( outLine(a[i],b[i],c) );  
        }  
        /**/  
        return;  
    }  
    /**/  
    private static String outLine ( boolean a, boolean b, boolean c ) {  
        return letter(a) + " " + letter(b) + " " + letter(c);  
    }  
    /**/  
    private static char letter ( boolean b ) {  
        if ( b ) return 'T';  
        else     return 'F';  
    }  
}
```

**Ans.**

```
a b c  
-----  
T T F  
T F T  
F T T  
F F F
```

## AP COMPUTER SCIENCE A – QUIZ 6 STUDY GUIDE

Problems **21** and **22** concern the program listed.

```
public class SearchStuff {
    /**/
    private int num, iter, index;
    private int [] intA;
    /**/
    public static void main ( String [] arg ) {
        /**/
        SearchStuff ss=new SearchStuff( Integer.parseInt(arg[0]) );
        ss.search();
        System.out.println( " iter = " + ss.getIterations() );
        System.out.println( "index = " + ss.getIndex() );
        /**/
        return;
    }
    /**/
    public SearchStuff ( int num ) {
        this.num=num;
        iter=0;
        index=-1;
        intA=new int [] { 2 , 4 , 7 , 18 , 22 , 33 , 37 , 42 , 58 , 63 , 77 };
    }
    /**/
    public int getIterations () {
        return iter;
    }
    /**/
    public int getIndex () {
        return index;
    }
    /**/
    public void search () {
        /**/
        int b, m, e;
        /**/
        b=0; e=intA.length-1;
        while ( true ) {
            iter++;
            m=(b+e)/2;
            if ( ( b == m ) || ( m == e ) ) return;
            /**/
            if ( intA[m] == num ) {
                index=m;
                return;
            }
            /**/
            if ( num < intA[m] ) e=m;
            else b=m;
        }
    }
}
```

**21)** If the program is invoked via `java SearchStuff 24`, what is the output of the program?

*Ans.*

```
iter = 5
index = -1
```

## AP COMPUTER SCIENCE A – QUIZ 6 STUDY GUIDE

**22)** If the program is invoked via `java SearchStuff 37`, what is the output of the program?

*Ans.*

```
iter = 3  
index = 6
```

**23)** For a list of length  $n$ , what is the order of the number of operations required in order to perform a binary search on the list?

*Ans.*

$\log n$

**24)** For a list of length  $n$ , what is the order of the number of operations required in order to perform a sequential search on the list?

*Ans.*

$n$

**25)** What is the output of the code segment?

```
String s="It was the best of times, it was the worst of times";  
String t=s.substring(11,24);  
System.out.println(t);
```

*Ans.*

best of times