CMPS 12A Spring 2016 Midterm Exam
Test Form A

Name_____

1) The range of values for a char type is 0 to 65536
   A) True
   B) False

2) The range of values for a short type is 0 to 65536
   A) True
   B) False

3) Informal but relatively precise descriptions of algorithms are called pseudocode.
   A) True
   B) False

4) A sequence of instructions on a computer is always an algorithm.
   A) True
   B) False

5) 16 bits are used to represent the values of both char and short types.
   A) True
   B) False

6) The number of bits used to represent values of type int is:
   A) 16
   B) 32
   C) 64
   D) 128

7) The number of bits used to represent values of type long is:
   A) 16
   B) 32
   C) 64
   D) 128

The following two questions use the following information:
Jane has written a program to print every line of a text file. Her program is called PrintList and it takes the name of a text file as a command line argument. She wants to test it on the file mySongs.txt. She has the files PrintList.java and mySongs.txt in the same folder.

8) What command will Jane type to compile her code?
   A) javac PrintList.java
   B) java PrintList
   C) javac PrintList.java mySongs.txt
   D) javac PrintList.class
   E) java PrintList mySongs.txt

9) After the code is compiled, what command will Jane type to run the program?
   A) javac PrintList mySongs.txt
   B) java PrintList mySongs.txt
   C) java PrintList.class
   D) java PrintList > mySongs.txt
   E) java PrintList.class > mySongs.txt

Consider the following program:

```
//StringVsId.java - contrast strings and identifiers
    class StringVsId {
        public static void main(String[] args) {
        String hello = "Hello, world!";
        String stringVary;
        stringVary = hello;
        System.out.println(stringVary);
        stringVary = "hello";
        System.out.println(stringVary);
    }
}
```

10) What is the output of the above program?
   A) Hello World!
      Hello World!
   B) Hello World!
      hello
   C) hello
      "hello"
   D) "Hello World!"
      "hello"
   E) "Hello World!"
      hello

Consider the following:

```
System.out.print(x) //print the value of x
System.out.println(x) //print the value of x followed by a newline
scan.nextInt() //get an int from the keyboard
Math.min(x,y) //find the smaller of x and y
Math.sqrt(x) //find the square root of x
w1.concat(w2) //concatenate the strings w1 and w2
word.length() //find the length of the string word
```

11) All of the these are:
   A) Output statements
   B) Input statements
   C) Predefined methods
   D) in java.utils
   E) classes

Consider the following fragment of code:
```
System.out.println("type two integers for
the width and height of a box");
```

12) The above lines of code output
   A) type two integers for
      the width and height of a box
   B) type two integers for the width and height of a box
   C) nothing since they are not legal

Consider the following fragment of code:
```
System.out.print("Hello, world!\n");
System.out.println("Hello, world!");
```

13) The above two lines of code will output
   A) "Hello world!\n"
      "Hello world!"
   B) Hello world!\n
      Hello world!
   C) Hello world!\nHello world!
   D) Hello world!
      Hello world!

Consider the following fragment of code:
```
printf("%s", "abc");
printf("%c%c%c", 'a', 'b', 'c');
```

14) The above two statements produce the same output.
   A) true
   B) false

Consider the following fragment of code:
```
int j = 0x10;
int k = 16;
boolean b  =  j != k;
```

15) If the above three lines of code were executed then b would be equal to
   A) 16
   B) 1016
   C) true
   D) 0x10
   E) false

Consider the following fragment of code:
```
char c = 'a';
System.out.printf(“%c”,c); // a is printed
System.out.printf(“%d”,c); // 97 is printed
```

16) Is the above fragment of code legal?
   A) Yes
   B) No

Consider the following fragment of code:

```
int n = 1234;
System.out.println("1234");
System.out.println(n);
```

17) The print statements in the code above produce the same output.

A) true
B) false

Consider the following program:

```
// MakeChange.java - change in dimes and pennies
import java.util.*;
class MakeChange {
    public static void  main (String[] args) {
        int price, change, dimes, pennies;
        Scanner scan = new Scanner(System.in);
        System.out.println("type price (0 to 100):");
        price = scan.nextInt();
        change = 100 - price; //how much change
        dimes = change / 10; //number of dimes
        pennies = change % 10; //number of pennies
        System.out.print("The change is : ");
        System.out.println(dimes + " dimes " + pennies + " pennies");
    }
}
```

18) List all the classes that are used or defined in the above program?

A) price, change, dimes, pennies
B) MakeChange
C) MakeChange, Scanner
D) MakeChange, String, Scanner, System
E) MakeChange, String, Scanner

Remember the range of values for bytes is -128 to 127
Consider the following fragment of code:

```
int i = 127, j = 128;
byte iAsByte = (byte)i, jAsByte = (byte)j;
System.out.println(iAsByte);
System.out.println(jAsByte);
```

19) The output of the above code is

A) 127
   -128
B) 127
   128

Consider the following fragment of code:

```
int x = 3/4;
int y = (int) (3.0f/4);
boolean b = x==y;
```

20) Execution of the above fragment of code will result in b being equal to

A) 3/4
B) true
C) 3.75
D) false

Consider the following statement:
a = (b = 2) + (c = 3);

21) The above statement yields
   A) The same results as execution of
      b = 2;
      c = 3;
      a = b + c;
   B) nothing it is illegal

Consider the following three expressions:
j *= k = m + 5
j *= (k = (m + 5))
j = (j * (k = (m + 5)))

22) The three expressions are equivalent.
   A) true
   B) false

23) True or false? The expressions i++ and ++i can be used interchanceably with no side effects.
   A) true
   B) false

24) The statement that: "Methods and variables start with lowercase and embedded words, as in readInt, dataOut, toString, and loopIndex, are capitalized. " is
   A) a requirement of Java syntax
   B) a convention used by programmers

25) True or false? The lexical elements of a Java program are keywords, identifiers, literals, operator symbols, punctuation, comments, and white space.
   A) true
   B) false because white space is not a lexical element

26) True of false? Keywords can also be used as variables, but then the special meaning of the keyword is overridden.
   A) true
   B) false

27) What is the value of the Java expression "10"+"20" ?
   A) 10 + 20
   B) "1020"
   C) 30

The next two questions are based on the following code:

```
/* This program prints a greeting message */
import java.util.*;
class Greet {
   public static void main(String[] args) {
      System.out.println("Hello " + args[0] + " and " + args[1]);
   }
}
/* sample run:
 * > java Greet Susan Stephen
 * Hello Susan and Stephen
 * > Java Greet Tom Jerry
 * Hello Tom and Jerry
 */
```

28) What happens when this program is run with one name, for example
> java Greet Elizabeth
(Hint: remember, args is an array of strings, and the print statement is accessing the first and second elements)

A) The program outputs: Hello Elizabeth
B) The program outputs: Hello Elizabeth and Elizabeth
C) The program throws an exception
D) The program outputs: Hello Elizabeth and null

29) What happens when this program is run with three names, for example
> java Greet Moe Larry Curly

A) The program outputs: Hello Moe and Larry and Curly
B) The program outputs: Hello Moe and Larry
C) The program throws an exeption
D) The program outputs: Hello Moe and Larry Curly

Consider the following two fragments of code:

```
//Code fragment A
{
    x = 1;
    {
        y = 2;
        System.out.println(y);
    };;;;;;;  //a bunch of semicolons
    System.out.println(x);
}
```

Code fragment B

```
{ //outer block
    x = 1;
    { //inner block
        y = 2;
        System.out.println(y);
    } //end of inner block
    System.out.println(x);
}
```

30) True or false? The above two code frangments A and B produce exactly the same result.

A) true
B) false

Consider the following fragment of code:

```
int i = 3, j = 4;
boolean flag;
flag = 5 < 6;
flag = (i == j);
flag = (j + 2) <= 6;
```

31) In the above fragment of code the variable flag takes on the folloing sequence of values in order.

A) true, false, true
B) false, true, false
C) true, true, false
D) true, false, undefined
E) true, true, true

32) The expressions, (m == 0 || n/m > 0) and (n/m >0 || m==0), have the same value regardless of the value of m.

A) true
B) false

Consider the following fragment of code:

```
x = 3;
y = 4;
if (x < y);
System.out.println("The smaller is " + x);
if (y < x);
System.out.println("The smaller is " + y);
```

33) What is printed when the above fragment of code is executed?

A) The smaller is 3
   The smaller is 4
B) The smaller is 3
C) The smaller is 4
D) nothing

Consider the following fragment of code:

```
temperature = 45;
if (temperature < 32)
    System.out.print("It is now");
    System.out.print(32 - temperature);
    System.out.println(" below freezing.");
System.out.println("It's " + temperature + "degrees");
```

34) If the above fragment of code is executed what will be printed?

A) It's 45 degrees
B) It is now -13 below freezing
C) -13 below freezing
   It's 45 degrees

Consider the following two fragments of code:

```
//code fragment A
if (ageOfPerson < 18)
System.out.println("child fare");
else {
if (ageOfPerson < 65)
System.out.println("adult fare");
else
System.out.println("senior fare");
}

//code fragment B
if (ageOfPerson < 18)
System.out.println("child fare");
else if (ageOfPerson < 65)
System.out.println("adult fare");
else
System.out.println("senior fare");
```

35) True or false? the above twe fragments of code, A and B, are equivalent.

A) true

B) false

Consider the following schema:

```
if (Expression1)
    if (Expression2)
        Statement1
else
    Statement2
```

36) In the above schema:

A) Statement2 is executed only when Expression1 is true and Expression2 is false.

B) Statement2 is executed whenever Expression1 is false.

Consider the following code fragment:

```
int count = 21;
System.out.println("The multiples of 21 between 1 and 100 are:");
while (count != 100){
    System.out.print(count + " ");
    count = count + 21;
}
System.out.println("done");
```

37) The above code fragment will print

A) 21 42 63 84 done

B) 21 42 63 84 105 done

C) neither of above answers

Consider the following code fragment:

```
int squareRoot = 1;
for (int i = 1; i <= 16; i++) {
    squareRoot = Math.sqrt(i);
}
System.out.println("i = " + i);
```

38) This code fragment will print

A) i = 16

B) i = 4

C) neither of the above answers

Consider the following fragment of code:

```
dayOfWeek = 4;
switch (dayOfWeek) {
    case 1:
        System.out.println("Sunday");
        break;
    case 2:
        System.out.println("Monday");
        break;
    case 3:
        System.out.println("Tuesday");
        break;
    case 4:
        System.out.println("Wednesday");
    case 5:
        System.out.println("Thursday");
        break;
    case 6:
        System.out.println("Friday");
        break;
    case 7:
        System.out.println("Saturday");
        break;
    default:
        System.out.println("Not a day number " + dayOfWeek);
}
```

39) The above fragment of code when executed prints

A) Monday
Tuesday

B) Wednesday
Thursday

C) Wednesday

The following code fragment is meant to sum up all the numbers in numArray, but there are two important pieces missing.

```
int[] numArray = { 3, 6, 42, 3 }
int arraySum = 0;
for (int i = 0; <A> ; i++) {
   arraySum = arraySum + numArray[ <B> ];
}
System.out.println(arraySum);
```

40) What should be inserted in place of <A> and <B> to complete the code?

	<A>	<B>
A)	i < numArray.length()	i
B)	i <= numArray.length()	arraySum
C)	i < numArray.lenght()	arraySum
D)	i <= numArray.length()	3
E)	i == numArray.length()	i++

Consider the following circumstance.
Ebenezer has written a simple Hello World program in java, but it is not compiling.

```
1 import java.util.*
2 class hello {
3   public static       void main(String[] args) {
4      System.out.println( Hello World! );
5 }
```

Ebenezer has a few ideas where the errors might be:
I. Line 1: he forgot the semicolon ; at the end of the line.
II. Line 2: hello should be capitalized.
III. Line 3: there are too many spaces between the words static and void.
IV. Line 4: he needs to put quotes around “Hello World!”
V. He needs an extra closing brace } at the end of his program.

41) Which of the above are the actual errors

A) I, II
B) I, III, IV
C) II, III, V
D) I, IV, V
E) I, II, III, V

In the next two questions consider the following code:

```
Node p = new Node();
Node q = p;
p.x = 1;
q.x = 2;
```

42) How many Node objects are there?

A) none
B) one
C) two

43) What is the value of p.x?

A) 1
B) 2

Consider the following fragment of code

```
boolean x = false;
if (x = true) {
  System.out.print("not ");
}
System.out.print("quite");
```

44) What does this code do?

A) print "quite"
B) print "not quite"
C) print "not"
D) infinite loop

Consider the following fragment of code for the next two questions:

```
String s = "ok";
for (int i = 1; i <= s.length(); i++) {
  System.out.print(s.charAt(i));
}
```

45) When int i is 1, what is the value of s.charAt(i)?

A) 'o'
B) 'k'
C) 1
D) 0

46) True of false? This code will cause an exception.

A) true
B) false

Consider the following fragment of code:

```
String s = "ok";
s.charAt(1) = 'b';
```

47) What is the result of the code?

A) s = "ok"
B) s = "bk"
C) s = "ob"
D) the code won't compile

Consider the following program:

```
class Min2 {
   public static void main(String[] args) {
      int j = 78, k = 3 * 30, m;
     System.out.println("Minimum of two integers Test:");
      m = min();
      System.out.println("The minimum of : " + j + " , " + k + " is " + m);
   }

   static int min() {
      if (j < k)
         return j;
      else
         return k;
   }
}
```

48) The results of the above program are:
   A) The minimum of : j, k is 78
   B) The minimum of : j, k is j
   C) The minimum of : j, k is 90
   D) None of above. It will not compile

49) The execution time of Bubble Sort of n items is proportional to
   A) log n
   B) n
   C) n squared
   D) 2 power n

50) The time for a Binary Search over n items is proportional to log n regardless of whether the items are sorted or not.
   A) True
   B) False

Answer Key
Testname: CMPS012ASPRING16MIDTERM

1) A
2) B
3) A
4) B
5) A
6) B
7) C
8) A
9) B
10) B
11) C
12) C
13) D
14) A
15) E
16) A
17) A
18) D
19) A
20) B
21) A
22) A
23) B
24) B
25) A
26) B
27) B
28) C
29) B
30) A
31) A
32) B
33) A
34) C
35) A
36) A
37) C
38) C
39) B
40) A
41) D
42) B
43) B
44) B
45) B
46) A
47) D
48) D
49) C
50) B