Some Practice Midterm Problems

September 29, 2017

1. 1 point word_count is a legal identifier in Java A. True B. False
2. 1 point k2 is a legal identifier in Java A. True B. False
3. 1 point Krazy1 is a legal identifier in Java A. True B. False
4. 1 point hot? is a legal identifier in Java A. True B. False
5. 1 point 2ndPlaceWinner is a legal identifier in Java A. True B. False
6. 1 point 2beOrNot2Be is a legal identifier in Java A. True B. False
7. 1 point cous-cous is a legal identifier in Java A. True B. False
8. 1 point It’s legal to have an integer variable named x and another integer variable named X in the same program. A. True B. False
9. 1 point How much is a kilobyte?
   A. 10^3 bytes
   B. 10^6 bytes
   C. 10^9 bytes
   D. 10^{12} bytes
   E. 10^{15} bytes
10. 1 point How much is a megabyte?
    A. 10^3 bytes
    B. 10^6 bytes
    C. 10^9 bytes
    D. 10^{12} bytes
    E. 10^{15} bytes
11. How much is a gigabyte?
   A. 10^3 bytes
   B. 10^6 bytes
   C. 10^9 bytes
   D. 10^{12} bytes
   E. 10^{15} bytes

12. How much is a terabyte?
   A. 10^3 bytes
   B. 10^6 bytes
   C. 10^9 bytes
   D. 10^{12} bytes
   E. 10^{15} bytes

13. How long is a millisecond
    A. 10^{-3} seconds
    B. 10^{-6} seconds
    C. 10^{-9} seconds
    D. 10^{-12} seconds
    E. 10^{-15} seconds

14. How long is a microsecond
    A. 10^{-3} seconds
    B. 10^{-6} seconds
    C. 10^{-9} seconds
    D. 10^{-12} seconds
    E. 10^{-15} seconds

15. How long is a nanosecond
    A. 10^{-3} seconds
    B. 10^{-6} seconds
    C. 10^{-9} seconds
    D. 10^{-12} seconds
    E. 10^{-15} seconds
16. 1 point What is the result of:

```
int x=10, y=20;
boolean isBored=true;

if (isBored) {
    int z = x+y;
} else {
    z = x-y;
}
System.out.println(z);
```

A. prints 30
B. prints -10
C. compiler error: illegal declaration of isBored
D. compiler error: can’t find symbol z

17. 1 point The most important job of the Java compiler is to

18. 1 point In what component of your computer is most of the computation done?

19. 1 point What do we mean when we classify DRAM as a volatile storage?

20. 1 point What is the type of the expression: true

21. 1 point What is the type of the expression: '1'

22. 1 point What is the type of the expression: 23.2

23. 1 point What is the type of the expression: 32 + 2
24. **1 point** What is the type of the expression: "32"+2

25. **1 point** What is the result of the expression: 52482/24478198

26. **1 point** What is the result of the expression: (true || (3 == 2))

27. **1 point** What is the result of the expression: !(false)

28. **1 point** What is the result of the expression: !(4 < 2) && 3 < 10)

29. **1 point** What is the result of the expression: 32/8 != 32.0/8

30. **1 point** What is the result of the expression: !(true || 3 < 2) && !(false || true)

31. **1 point** What is the result of the expression: 18 % 5 * 10+3 * 4 / 2

32. **1 point** What is the result of the expression: 2 % 5 * 4+3 * 5/2

33. **1 point** What is the result of the expression: "Scholes" + 6*3

"Scholes18"
34. 1 point  What is the result of the expression: $0 \times (1264 + 2835) - 1.0$

35. 1 point  What is the result of the expression: "Scholes" + 1+1

36. 1 point  What is the result of the expression: $5 + 3/6/2 + 8 \times 5/3$

37. 1 point  What is the result of the expression: $3 > 3\% 5 + 2 \| 5 < 7 \& \& 1 < 2$

38. 1 point  What is the result of the expression: $(3 > 3\% 5 + 2 \& \& 5 < 7 \& \& 1 > 2) \& \& 0$

39. 1 point  What is the result of the expression:

$$2 + 1 + "\cdot + (3/4) + 3\times 4\times 3.012\times 0 + 12\times "3.012"$$

40. 1 point  What is the result of the expression:

"1" + 5/2 + 3%4*5 + (6+7)

$121519$

41. 1 point  What is the result of the expression:

"ascend".charAt(1) + "acknowledge".substring(3,6)

"snow"
42. **1 point** What is most appropriate Java data type to store the number of points scored by the New England Patriots during the Super Bowl

43. **1 point** What is most appropriate Java data type to store the number of days left in the semester

44. **1 point** What is most appropriate Java data type to store your name

45. **1 point** What is most appropriate Java data type to store your height in meters or yards

46. **1 point** What is most appropriate Java data type to store whether or not it’s hot right now

47. **1 point** What is most appropriate Java data type to store your middle initial

48. **1 point** Turn into a Java expression the statement "x is a multiple of y"

\[ x \mod y = 0 \]

49. **1 point** Write an if/else statement that prints "in the black" if revenue is the same or higher than expenses, otherwise print out "in the red."

```java
if (revenue >= expenses) {
    System.out.println("in the black");
} else {
    System.out.println("in the red");
}
```
50. 1 point We have two integers: x and y. Write an if statement that checks if one of them is even and the other is odd.

\[
\text{if } (x \% 2 == 0 \&\& y \% 2 == 1) \\
\text{or } (x \% 2 == 1 \&\& y \% 2 == 0) \text{ or } (x \% 2 + y \% 2 == 1)
\]

51. 1 point What is the output of the following code:

```java
for(int i = 0; i<10; i++) {
    if (i%3 == 1) {
        System.out.print(i);
    }
}
```

Output: 1 4 7 0 3 6 9
52. 1 point What is the output of this code?

```java
for(int i = 0; i<3 ; i++) {
    for(int j =0; j <= i; j++) {
        System.out.print(i + j);
        System.out.print(" "); // print a space
    }
    System.out.println();
}
```

53. 1 point What is the output of this code?

```java
public class Presidents {
    public static void main(String args[]) {
        int x=10, y=20, z=30;
        if (x<y) {
            System.out.println("Washington");
        } else if ((x+y)%2==0) {
            System.out.println("Adams");
        } else if (z-2 < y+1) {
            System.out.println("Jefferson");
        } else {
            System.out.println("Madison");
        }
    }
}
```
54. **1 point** What is the output of this code?

```java
public class Presidents {
    public static void main(String args[]) {
        int x=10, y=20, z=30;

        if (x<y) {
            System.out.println("Washington");
        } else if ((x+y)%2==0) {
            System.out.println("Adams");
        } else if (z-2 < y+1) {
            System.out.println("Jefferson");
        } else {
            System.out.println("Madison");
        }
    }
}
```

55. **1 point** What is the output of this code?

```java
public class Presidents {
    public static void main(String args[]) {
        int x=10, y=20, z=30;

        if (x<y) {
            System.out.println("Washington");
        } else if ((x+y)%2==0) {
            if (z>=30 || z<=30) {
                System.out.print("(not Quincy) ");
            }
            System.out.println("Adams");
        } else if (z-2 < y+1) {
            System.out.println("Jefferson");
        } else {
            System.out.println("Madison");
        }
    }
}
```

56. **1 point** What is the output of this code?

```java
public class Presidents {
    public static void main(String args[]) {
        int x=10, y=20, z=30;

        if (x<y) {
            System.out.println("Washington");
        } else if ((x+y)%2==0) {
            System.out.println("Adams");
        } else if (z-2 < y+1) {
            System.out.println("Jefferson");
        } else {
            System.out.println("Madison");
        }
    }
}
```
57. 1 point What is the value of a, b, and c when the following code finishes?

```java
int a=5, b=3, c=2;
if (c < a) {
    c-=a;
} else if (b < a) {
    b-=a;
}
if (a + b > c) {
    a+=10;
} else {
    b+=10;
}
```

58. 1 point What is the value of a, b, and c when the following code finishes?

```java
int a=1, b=2, c=3;
if (a * 2 < b) {
    a*=3;
    c-=b;
}
if (b < a) {
    b++;
} else {
    a--;
    c++;
}
```

59. 1 point What is printed by the following?

```java
for (int i=1; i<4; i++) {
    for (char c='a'; c<='c'; c++) {
        if (i%2==0) {
            i++;
            System.out.println(i + " " + c);
        } else {
            c++;
            System.out.println(c + " " + i);
        }
    }
}
```
60. 1 point What is printed by the following?

```java
String s1="bob";
String s2="lob";
String s3="law";

for (int i=0; i<4; i++) {
    if (i%2==0) {
        s1+=s2;
    } else {
        s2=s1+s3;
    }
}
System.out.println(s1);
```

61. 1 point Is there a compiler error in this code? If so, what is it? If not, what’s printed?

```java
public class WhatsPrinted1 {
    public static void func(int x) {
        x++;
    }

    public static void main(String args[]) {
        int y=10;
        func(y);
        System.out.println(y);
    }
}
```
62. 1 point Is there a compiler error in this code? If so, what is it? If not, what’s printed?

```java
public class WhatsPrinted2 {
    public static void func(int x) {
        x++;
        System.out.println(x);
    }

    public static void main(String args[]) {
        int y=10;
        func(y);
    }
}
```

63. 1 point Is there a compiler error in this code? If so, what is it? If not, what’s printed?

```java
public class WhatsPrinted3 {
    public static void func(int x, int y, int z) {
        x++;
        y*=z%2;
        z*=2;
    }

    public static void main(String args[]) {
        int x=10, y=20, z=30;
        func(y, z, x);
        System.out.println(x);
    }
}
```
64. 1 point Is there a compiler error in this code? If so, what is it? If not, what’s printed?

```java
public class WhatsPrinted4 {
    public static void func(int x, int y, int z) {
        x++;
        y+=z%2;
        z*=2;
        System.out.println(z);
    }

    public static void main(String args[]) {
        int x=10, y=20, z=30;
        func(y, z, x);
    }
}
```

65. 1 point Is there a compiler error in this code? If so, what is it? If not, what’s printed?

```java
public class WhatsPrinted5 {
    public static int func(int x) {
        x*=2;
        return x;
    }

    public static void main(String args[]) {
        int x=10;
        func(x);
        System.out.println(x);
    }
}
```
66. 1 point Is there a compiler error in this code? If so, what is it? If not, what’s printed?

```java
public class WhatsPrinted6 {
    public static int func(int x) {
        x*=2;
        return x;
    }

    public static void main(String args[]) {
        int x=10;
        x=func(x);
        System.out.println(x);
    }
}
```

67. 1 point Is there a compiler error in this code? If so, what is it? If not, what’s printed?

```java
public class WhatsPrinted7 {
    public static void func(String base, String prefix, String suffix) {
        base = prefix+base+suffix;
    }

    public static void main(String args[]) {
        String r="ject";
        String p="con";
        String s="ure";
        func(r, p, s);
        System.out.println(r);
    }
}
```
68. 1 point Is there a compiler error in this code? If so, what is it? If not, what’s printed?

```java
public class WhatsPrinted8 {
    public static String func(String base, String prefix, String suffix) {
        base = prefix+base+suffix;
        return base;
    }

    public static void main(String args[]) {
        String r="ject";
        String p="con";
        String s="ure";

        func(r, p, s);
        System.out.println(r);
    }
}
```

69. 1 point Is there a compiler error in this code? If so, what is it? If not, what’s printed?

```java
public class WhatsPrinted9 {
    public static String func(String base, String prefix, String suffix) {
        base = prefix+base+suffix;
        return base;
    }

    public static void main(String args[]) {
        String r="ject";
        String p="con";
        String s="ure";

        r=func(r, p, s);
        System.out.println(r);
    }
}
```
Is there a compiler error in this code? If so, what is it? If not, what’s printed?

```java
public class WhatsPrinted10 {
    public static void f1() {
        System.out.print("a");
    }

    public static void f2() {
        f1();
        System.out.print("b");
    }

    public static void f3() {
        f2();
        f1();
        System.out.print("c");
    }

    public static void main(String args[]) {
        f3();
        System.out.println();
    }
}
```
71. **3 points** Write the few lines of code that prints the first 50 perfect squares (1, 4, 9, 16, 25, 36, ...). You do not need to write a full program (i.e., there’s no need for `public class ...` or `public static void main ...`.

```java
for (int i = 1; i <= 50; i++) {
    System.out.println(i*i);
}
```

72. **1 point** In the main function provided, write a program that asks the user to input two integers and prints out the first integer raised to the second (e.g., if the user enters 2 and 4, the program prints 16, which is $2^4$). You do not have to write any imports or `public class ....` Please just fill in `main`.

```java
public static void main(String args[]) {
    Scanner in = new Scanner(System.in);
    System.out.print(">");
    int b = in.nextInt();
    System.out.print(">");
    int e = in.nextInt();
    int p=b;
    for (int i=2; i<=e; i++)
        p*=b;
    System.out.println(p);
}
```

73. **1 point** Write the few lines of code that print all of the integers between 5 and 1000 that are evenly divisible by 6.

```java
Scanner in = new Scanner(System.in);
int b = in.nextInt();
System.out.print(">");
int e = in.nextInt();
int p=b;
for (int i=2; i<=e; i++)
    p*=b;
System.out.println(p);
```
74. 1 point Write a java program which asks the user to enter three integers. The program prints "between" if the 2nd number falls in between the 1st and 3rd, and "not between" if it doesn’t. For example, if I enter 1 10 27, the program prints "between", and if I enter 5 9 6, the program prints "not between".

75. 1 point Write a static method named twoConsecutive that accepts three integers as parameters and returns true if there is at least one pair of integers that differ by exactly 1. For example, the integers 3 and 4 differ by 1. The integers 12 and 11 also differ by 1.

Your method should return false if there are no such consecutive values. The integers could be passed in any order; the two consecutive values could be any of the two values passed in.

Here are some sample calls:

<table>
<thead>
<tr>
<th>Call</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>twoConsecutive(1, 2, 12)</td>
<td>true</td>
</tr>
<tr>
<td>twoConsecutive(1, 12, 2)</td>
<td>true</td>
</tr>
<tr>
<td>twoConsecutive(2, 12, 1)</td>
<td>true</td>
</tr>
<tr>
<td>twoConsecutive(4, 5, 3)</td>
<td>true</td>
</tr>
<tr>
<td>twoConsecutive(2, 4, 6)</td>
<td>false</td>
</tr>
<tr>
<td>twoConsecutive(8, 8, 8)</td>
<td>false</td>
</tr>
</tbody>
</table>

52. 1 point What is the output of this code?

```java
for(int i = 0; i<3 ; i++) {
    for(int j =0; j <= i; j++) {
        System.out.print(i + j); // print a space
    }
    System.out.print(" "); // print a space
}
System.out.println();
```