Some Practice Midterm Problems

May 28, 2020

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. **1 point** 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. **1 point** 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. **1 point** 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. **1 point** 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. **1 point** 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:

```java
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
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" + 2 + 2

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: \(3 > 3 \% 5 + 2 \& \& 5 < 7 \& \& 1 > 2 \% 2\)

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

\[2 + 1 + "." + (3/4) + 3 \times 4\]

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

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

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

"ascend".charAt(1) + "acknowledge".substring(3, 6)
42. 1 point What is most appropriate Java data type to store the number of points scored by the Eagles 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”

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.”
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.

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);
    }
}
```
52. 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. 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 {
            if (x==10) {
                System.out.println("Madison");
            }
        }
    }
}
```
57. 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. 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. 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. 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);
```

```
- s1 → bobloblobloblaw
- s2 → lobbobloblawboblobloblaw
- s3 → law
```

61. 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?

```
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?

```
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 ...`).

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[]) {
    // Your code here
}
```

73. **1 point** Write the few lines of code that print all of the integers between 5 and 1000 that are divisible by 6.
74. 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. Write the few lines of code that prompts the user to enter a series of exam scores, stopping when the user has entered an exam score < 0. The program then prints the highest, lowest, and average score or no scores if no scores have been entered.

76. 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>

77. Write a method which is passed the name of a text file. The method returns the number of characters found in the file. You are not required to handle FileNotFoundException.

78. Write a method which is passed the name of a text file. The method returns the number of words found in the file. You are not required to handle FileNotFoundException.

79. Write a method which is passed the name of a text file. The method returns the length of the longest word found in the file. You are not required to handle FileNotFoundException.

80. Write a method which is passed the name of a text file which contains grades in a course that’s in the following format:

```
Stan 99 87 100
Dipper 100 100 97 100
Mabel 100 100
Seuss 72 85 65
```

the method returns the average of the student with the highest semester average.
81. Write a method which is passed the name of a text file. The method returns the number of blank lines contained in the file. You are not required to handle FileNotFoundException.

82. Write the few lines of code that prompts the user to enter a series of exam scores, stopping when the user has entered an exam score < 0. The program then prints the highest, lowest, and average score or no scores if no scores have been entered.

83. Write a method which is passed \( A[] \), which is an array of int, and an int passingScore. The method returns the number of items in \( A[] \) which are greater than or equal to passingScore.

84. Write a method which is passed an array of int \( A[] \). The method returns true if \( A[] \) is the same backwards and forwards.

85. Write a method same( ), which is passed two arrays of int. The method returns true if the two arrays contain exactly the same contents.

86. Write a method called copy, which is passed \( A[] \), which is an array of int. The method returns a new array consisting of exactly the same items in \( A[] \).

87. Write a method called copy, which is passed \( A[] \), which is an array of int, and an integer n. The method returns a new array consisting of the first n items in \( A[] \).

88. Write a method called slice, which is passed \( A[] \), which is an array of int, an integer i and an integer j. The method returns a new array consisting of all of the items in \( A[] \) from \( A[i] \) to \( A[j] \) inclusive.

89. Write a method called copy, which is passed \( A[] \), which is an array of int, and an integer n. The method returns a new array consisting of all of the items in \( A[] \) which are greater or equal to n.

90. Write a method which is passed an array of int and returns true if the array is sorted in ascending order.

91. Write a method called generateTriangleNumbers(). This method will take in an integer x and will return an array of integers containing the first x triangle numbers. The nth triangle number is the sum of 1 + 2 + 3 + 4 + \ldots (n - 1) + n.
   - \( \text{generateTriangleNumbers}(3) \) returns the array 1,3,6
   - \( \text{generateTriangleNumber}(1) \) returns the array 1
   - \( \text{generateTriangleNumbers}(7) \) returns the array 1, 3, 6, 10, 15, 21, 28

92. Write a method which is passed a String and returns the String in reverse.

93. Write a method which is passed a two-dimensional array of int and prints it row by row. Do not assume that each row has the same number of columns.

94. Write a method which is passed a two-dimensional array of int and prints it column by column. You may assume that each row has the same number of columns.

95. Write a method which is passed a String which returns true if the String contains a double letter or false otherwise.

96. Write a method which is passed a String. It returns the index of the last Roman Numeral (recall that the Roman Numerals are 'I', 'V', 'X', 'L', 'C', 'D', 'M') found in the String or -1 if no Roman Numeral is found in the String.

97. Write a method which is passed a String s and returns a String that’s exactly the same as s, but with no vowels.
98. Write a method which is passed a String $s$ and returns a new String that's the same as $s$, but with the first letter of each word capitalized. There is a static method in the Character class toUpperCase that is passed a char c. If c is a lower-case letter, it returns its upper case equivalent. If it’s not a lower-case letter, it returns c.

99. Write a method called acronym, which is passed a String $s$ and returns a new String consisting of the first letter of each word in $s$. For example, if $s$ refers to the String "United Parcel Service", the method returns the String "UPS".

100. Write a method appendIfMissing which is passed a String $s$ and a String $e$ (for ending). If $s$ doesn’t already end with $e$, the method returns a new String which consists of the contents of $s$ concatenated with $e$. It returns $s$ otherwise. For example, if $s$ refers to the String "lightningbug" and $e$ refers to the String "bug", the method returns "lightningbug". If $s$ refers to the String "Airplane II", and $e$ refers to the String ": the Sequel", the method returns "Airplane II: the Sequel".