Java Module – Lesson 2A – Practice Exercise

Completion
Complete each sentence or statement.

1. The three main data types used in a typical Java program are: ____________________, ____________________ , and ____________________.

2. In general, data types that are simple in nature are referred to as p_________________, and more complex data types are called o____________.

3. The four main primitive data types are: _________, _________, _________, and _________.

4. The four other less used primitive data types are: _________, _________, _________, and _________.

5. The main object data type used so far is the S__________.

6. Describe the difference between Strings and chars, discussing length and symbols used.

   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

7. List the five parts of a typical initialization statement

   __________,’___________,’___________,’___________,’___________,’___________’

8. Rewrite the following initialization statement as two separate statements: a declare and an assignment.

   int x = 5;
   ___________________________
   __________;
   __________;

9. Rewrite the following initialization statement as two separate statements: a declare and an assignment.

   double wage = 9.25;
   ___________________________
   ___________________________
   ___________________________
Java Module – Lesson 2A – Practice Exercise (cont.)

10. Fill in the blanks below with appropriate data about you.

String name = ______________________;
int age = ______________________;
double wage = ______________________;
char initial = ______________________;
boolean smart = ______________________;

11. A variable that is permanently assigned inside a program is called a ___________ and uses the word __________ to indicate this.

12. The difference between a primitive and an object is that a primitive is a memory location that actually contains a ________________, but an object is a memory location that contains the ___________ _______________ of a value.

13. List the absolute “must” rules for creating valid Java identifiers.
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

14. List the “good idea” rules for creating valid Java identifiers.
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

15. List the conventions, or “commonly agreed upon” rules for creating valid Java identifiers.
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Java Module – Lesson 2A – Practice Exercise (cont.)

16. For what two word phrase is “bit” an abbreviation? ___________ ____________

17. When the maximum or minimum value is exceeded by 1 in an outward direction, such as adding 1 to the maximum, or subtracting 1 from the minimum, this causes a computer phenomenon called ________________.

18. When 1 is added to the maximum value of a data type, what value is the result of this?

______________________________________________

19. When 1 is subtracted from the minimum value of a data type, what value is the result of this?

______________________________________________

20. In general terms, the word transcendental refers to concepts, ideas, and beliefs that come to us from beyond our senses, things we cannot see, hear, touch, feel, or taste, but have a “gut feeling” about. Similarly, in mathematics, there are certain numbers that are referred to as “transcendental numbers”, in the fact that they are irrational (cannot be expressed as a ratio of discreet values), and highly significant in mathematics. Two well-known examples of these numbers are represented as the Java mathematical constants __________ (the ratio of the circumference of a circle to its diameter) and __________ (the base of the natural logarithms).

True/False

___ 21. final int x = 4;
    x = 5;
___ 22. char a;
    a = 'a';
___ 23. first name
___ 24. String word = 'hello';
___ 25. boolean flag = "true";
___ 26. int x = 45;
___ 27. 5_star
___ 28. FLAG
___ 29. final char a = 'a';
___ 30. main
___ 31. myName
___ 32. final char a;
    a = 'a';
___ 33. $cost
___ 34. double d;
    d = 4.5;
Java Module – Lesson 2A – Practice Exercise (cont.)

Matching

Match each value with the correct Java constant.

a. Byte.MIN_VALUE  
ed. Byte.MAX_VALUE
b. Short.MIN_VALUE  
f. Short.MAX_VALUE
c. Integer.MIN_VALUE  
g. Integer.MAX_VALUE
d. Long.MIN_VALUE  
h. Long.MAX_VALUE

35. -9223372036854775808
36. Long.MAX_VALUE+1
37. -32768
38. -128
39. Short.MAX_VALUE+1
40. Integer.MAX_VALUE+1
41. Integer.MIN_VALUE-1
42. 127
43. Byte.MAX_VALUE+1
44. 2147483647
45. Long.MIN_VALUE-1
46. 9223372036854775807
47. 32767
48. Byte.MIN_VALUE-1
49. -2147483648
50. Short.MIN_VALUE-1
Match each data type with the number of memory storage bits required.

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<tbody>
<tr>
<td>a.</td>
<td>4</td>
<td>b.</td>
<td>8</td>
<td>c.</td>
</tr>
<tr>
<td>e.</td>
<td>64</td>
<td>f.</td>
<td>128</td>
<td>g.</td>
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___ 51. long  
___ 52. int  
___ 53. short  
___ 54. byte  
___ 55. char  
___ 56. double  
___ 57. float

Match each abbreviation with the correct memory designation.

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<tbody>
<tr>
<td>a.</td>
<td>b</td>
<td>b.</td>
<td>B</td>
<td>c.</td>
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<tr>
<td>f.</td>
<td>TB</td>
<td>g.</td>
<td>PB</td>
<td>h.</td>
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___ 58. byte  
___ 59. gigabyte  
___ 60. kilobyte  
___ 61. bit  
___ 62. exabyte  
___ 63. zettabyte  
___ 64. megabyte  
___ 65. terabyte  
___ 66. petabyte  
___ 67. yottabyte

Match each given range or description to the correct data type.

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<tr>
<td>a.</td>
<td>int</td>
<td>b.</td>
<td>float</td>
<td>c.</td>
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<tr>
<td>e.</td>
<td>short</td>
<td>f.</td>
<td>long</td>
<td>g.</td>
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</table>

___ 68. -2147483648...2147483647  
___ 69. 0...65535  
___ 70. -128...127  
___ 71. approximately -9 quintillion...9 quintillion  
___ 72. -32768...32767  
___ 73. up to 15 decimal places of storage and output precision  
___ 74. up to 7 decimal places of storage and output precision
Java Module – Lesson 2A – Practice Exercise (cont.)

Match each data value with the most appropriate Java data type.

a. int  
b. double  
c. char  
d. boolean  
e. String

75. "Hello"  
76. 0.28  
77. 'A'  
78. '9'  
79. 3.4  
80. 65  
81. 100000  
82. "true"  
83. false  
84. "B"
Java Module – Lesson 2A – Practice Exercise – Key

1. int - integers
double - decimals
String - words and sentences

2. primitives
objects

3. int, double, char, boolean

4. float, short, byte, long

5. String

6. chars are exactly one character and are enclosed in single quotes
Strings can be zero or more characters long and are enclosed in double quotes.

7. data type, identifier, = sign, the value, semicolon

8. int x;
x = 5;

9. double wage;
wage = 9.25;

10. String name = "John Owen";
int age = 57;
double wage = 54.65;
char initial = 'B';
boolean smart = true;

11. A variable that is permanently assigned inside a program is called a constant and uses the word final to indicate this.

12. The difference between a primitive and an object is that a primitive is a memory location that actually contains a value, but an object is a memory location that contains the memory location of a value.

13. No "magic" Java reserved words
Start with an underscore or a letter, but never a digit
Use only letters, digits, and underscore, never symbols or spaces

14. Use descriptive names for variables
Avoid single letters for important variables, ok for utility variables like loop control variables

15. Multiple words are separated by underscore,
OR start with lowercase and capitalize any word after that
Variables always start with lowercase letter
Constants are always in all caps
Class identifiers start with capital letters

16. binary digit
17. wraparound

18. The minimum value of that data type.
19. The maximum value of that data type.
TRUE/FALSE

21. F
   Once a constant (final) variable has been assigned within a program, it cannot be changed.

22. T

23. F
   Invalid - has a space

24. F

25. F

26. T

27. F
   Invalid - starts with a digit

28. T

29. T

30. F
   Invalid - reserved Java word

31. T

32. T

33. F
   Invalid - starts with a symbol

34. T

MATCHING

35. D  51. E  68. A
36. D  52. D  69. G
37. B  53. C  70. D
38. A  54. B  71. F
40. C  56. E  73. C
41. G  57. D  74. B
42. E

43. A  58. B  75. E
44. G  59. E  76. B
45. H  60. C  77. C
46. H  61. A  78. C
47. F  62. H  79. B
48. E  63. I  80. A
49. C  64. D  81. A
50. F  65. F  82. E
   66. G  83. D
   67. J  84. E