**Chapter 8**

**Recursion Practice**

**(and still more)**

11. For each call to the following method, indicate what value is returned.

 public int mystery1(int x, int y)

 {

 if (x < y)

 return x;

 else

 return mystery1(x-y, y);

 }

mystery1(6, 13)

|  |
| --- |
|  |

 mystery1(8, 2)

|  |
| --- |
|  |

mystery1(14, 10)

|  |
| --- |
|  |

12. For each call to the following method, indicate what console output is produced.

 public void mystery2(int n)

 {

 if (n <= 1)

 System.out.print(n);

 else

 {

 mystery2(n/2);

 System.out.print(“,” + n);

 }

 }

mystery2(1)

|  |
| --- |
|  |

 mystery2(4)

|  |
| --- |
|  |

mystery2(100)

|  |
| --- |
|  |

13. For each call to the following method, indicate what value is returned.

 public int mystery3(int n)

 {

 if (n < 0)

 return –mystery3(-n);

 else if (n < 10)

 return n;

 else

 return mystery3(n/10 + n%10);

 }

 mystery3(6)

|  |
| --- |
|  |

mystery3(17)

|  |
| --- |
|  |

 mystery3(-479)

|  |
| --- |
|  |

14. For each call to the following method, indicate what value is returned.

 public int mystery4(int n)

 {

 if(n < 0)

 return mystery4(-n);

 else if (n < 10)

 return n;

 else

 return n%10 + mystery4(n/10);

 }

 mystery4(8)

|  |
| --- |
|  |

 mystery4(-52)

|  |
| --- |
|  |

 mystery4(3052)

|  |
| --- |
|  |

15. Assume the array contains: {2,4,6} and that the call to the sum method is: sum(arr,3). What value is returned?

 int sum(int arr[], int n)

 {

 if (n == 0)

 return 0;

 else

 {

 int smallResult = sum(arr, n-1);

 return smallResult + arr[n-1];

 }

 }

16. For each call to the following method, indicate what value is returned.

 public int mystery5(int x, int y)

 {

 if (x < 0)

 return –mystery5(-x, y);

 else if (y < 0)

 return –mystery5(x, -y);

 else if (x ==0 && y == 0)

 return 0;

 else

 return 100\*mystery5(x/10, y/10) + 10\*(x%10) + y%10;

 }

 mystery5(5,7)

|  |
| --- |
|  |

mystery5(12,9)

|  |
| --- |
|  |

 mystery5(-7,4)

|  |
| --- |
|  |

17. For each call to the following method, indicate what value is returned.

 public void mystery6(int x, int y)

 {

 if(y == 1)

 System.out.print(x);

 else

 {

 System.out.print(x\*y + “,”);

 mystery6(x, y-1);

 System.out.print(“,” + x\*y);

 }

 }

 mystery6(4,1)

|  |
| --- |
|  |

 mystery6(8,2)

|  |
| --- |
|  |

 mystery6(3,4)

|  |
| --- |
|  |

18. For each call to the following method, indicate what console output is produced.

 public void mystery7(int n)

 {

 if(n <= 0)

 System.out.print(“\*”);

 else if (n%2 == 0)

 {

 System.out.print(“(“);

 mystery7(n-1);

 System.out.print(“)”);

 }

 else

 {

 System.out.print(“[“);

 mystery7(n-1);

 System.out.print(“]”);

 }

 }

 mystery7(0)

|  |
| --- |
|  |

 mystery7(1)

|  |
| --- |
|  |

mystery7(5)

|  |
| --- |
|  |

19. For each call to the following method, indicate what console output is produced.

 public void mystery8(int n)

 {

 if(n > 100)

 System.out.print(n);

 else

 {

 mystery8(2\*n);

 System.out.print(“,” + n);

 }

 }

mystery8(113)

|  |
| --- |
|  |

 mystery8(70)

|  |
| --- |
|  |

 mystery8(42)

|  |
| --- |
|  |

20.For each call to the following method, indicate what console output is produced.

 public void mystery9(int x)

 {

 if(x < 10)

 System.out.print(x);

 else

 {

 int y = x%10;

 System.out.print(y);

 mystery9(x/10);

 System.out.print(y);

 }

 }

 mystery9(7)

|  |
| --- |
|  |

 mystery9(38)

|  |
| --- |
|  |

mystery9(194)

|  |
| --- |
|  |