Review - Recursion

1. What is printed by the method call:

public void f(int a, int b)

{

if (a/b != 0)

f(a/b,b);

System.out.print(a % b);

}

a) f(4,2) \_\_\_\_\_\_ b) f(5,2) \_\_\_\_\_\_

c) f(3,7) \_\_\_\_\_\_ d) f(9,3) \_\_\_\_\_\_

e) f(25,3) \_\_\_\_\_\_ f) f(33,4) \_\_\_\_\_\_

g) What is the purpose of method f? \_\_\_\_\_\_

a) find gcf b) find lcm

c) convert a to base b d) convert b to base a

2. What is returned by the method call:

public int mystery(int x, int y)

{

if (x < y)

return x;

else

return mystery(x - y, y);

}

a) mystery(6, 13) \_\_\_\_\_\_

b) mystery(14, 10) \_\_\_\_\_\_

c) mystery(37, 10) \_\_\_\_\_\_

d) mystery(8, 2) \_\_\_\_\_\_

e) mystery(50, 7) \_\_\_\_\_\_

g) What is the purpose of method mystery? \_\_\_\_\_\_

a) find gcf b) find x % y

c) find lcm d) find y % x

3. What is printed by the method call:

a) myst(0) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) myst(1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) myst(2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) myst(3) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e) myst(6) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. What is printed by the method call:

a) mystery2(1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) mystery2(2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

public void myst(int n)

{

if (n <= 0)

System.out.print("\*");

else if (n % 2 == 0)

{

System.out.print("(");

myst(n - 1);

System.out.print(")");

}

else

{

System.out.print("[");

myst(n - 1);

System.out.print("]");

}

}

public void mystery2(int n)

{

if (n <= 1)

System.out.print(n);

else

{

mystery2(n/2);

System.out.print(", " + n);

}

}

c) mystery2(3) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) mystery2(4) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e) mystery2(16) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

f) mystery2(30) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

g) mystery2(100) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

h) How many times will mystery2 be called by the call mystery2(1000)? \_\_\_\_\_

public int mystery3(int x, int y) **//#5**

{

if (x < 0)

return -mystery3(-x, y);

else if (y < 0)

return -mystery3(x, -y);

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

return 0;

else

return 100 \* mystery3(x/10, y/10) + 10 \* (x % 10) + y % 10;

}

5. What is returned by the method call:

a) mystery3(5, 7) \_\_\_\_\_\_\_\_\_\_\_ b) mystery3(12, 9) \_\_\_\_\_\_\_\_\_\_\_

c) mystery3(-7, 4) \_\_\_\_\_\_\_\_\_\_\_ d) mystery3(13, 72) \_\_\_\_\_\_\_\_\_\_\_

e) mystery3(-23, -48) \_\_\_\_\_\_\_\_\_\_\_ f) mystery3(128, 343) \_\_\_\_\_\_\_\_\_\_\_

6. What is returned by the method call:

public int mystery(int n) **//#6**

{

if (n < 0)

return -mystery(-n);

else if (n < 10)

return n;

else

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

}

a) mystery(6) \_\_\_\_\_\_\_\_\_\_

b) mystery(17) \_\_\_\_\_\_\_\_\_\_

c) mystery(78) \_\_\_\_\_\_\_\_\_\_

d) mystery(977) \_\_\_\_\_\_\_\_\_\_

e) mystery(-479) \_\_\_\_\_\_\_\_\_\_

f) What does this method return?

a) sum of digits with nines removed c) gcf

b) argument % 10 d) lcm

7. What is returned by the method call:

public int mystery(int x, int y) **//#7**

{

if (x < 0)

return -mystery(-x, y);

else if (x < y)

return x;

else

return mystery(x - y, y);

}

a) mystery(16, 27) \_\_\_\_\_\_\_\_\_\_\_\_

b) mystery(27, 16) \_\_\_\_\_\_\_\_\_\_\_\_

c) mystery(50, 11) \_\_\_\_\_\_\_\_\_\_\_\_

d) mystery(47, 10) \_\_\_\_\_\_\_\_\_\_\_\_

e) mystery(-23, 9) \_\_\_\_\_\_\_\_\_\_\_\_

f) What is the purpose of method mystery? \_\_\_\_\_\_

a) find gcf b) find x % y

c) find lcm d) find y % x

8. What is returned by the method call:

public int mystery(int x, int y) **//#8**

{

if (x == 0)

return y;

else

return mystery(y % x, x);

}

a) mystery(8, 20) \_\_\_\_\_\_\_\_\_\_\_\_

b) mystery(18, 10) \_\_\_\_\_\_\_\_\_\_\_\_

c) mystery(4, 13) \_\_\_\_\_\_\_\_\_\_\_\_

d) mystery(36, 12) \_\_\_\_\_\_\_\_\_\_\_\_

e) What is the purpose of method mystery? \_\_\_\_\_\_

a) find gcf b) find x % y

c) find lcm d) find y % x

public int mystery1(int x, int y) **//#9**

{

if (x == 0)

return y;

else

return mystery1(x/10, 10 \* y + x % 10);

}

public int mystery2(int n)

{

if (n < 0)

return -mystery2(-n);

else

return mystery1(n, 0);

}

9. What is returned by the

method call:

a) mystery2(8) \_\_\_\_\_\_\_\_\_\_\_

b) mystery2(19) \_\_\_\_\_\_\_\_\_\_\_

c) mystery2(-34) \_\_\_\_\_\_\_\_\_\_\_

d) mystery2(115) \_\_\_\_\_\_\_\_\_\_\_

e) mystery2(-275) \_\_\_\_\_\_\_\_\_\_\_

public void mystery(int n) **//#10**

{

if (n == 0)

System.out.print("\*");

else

{

mystery(n - 1);

System.out.print("+");

mystery(n - 1);

}

}

10. What is printed by the method call:

a) mystery(0) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) mystery(1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) mystery(2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. What is displayed by mystery(9);

public void mystery(int n)

{

if (n <= 1)

System.out.print(n);

else

{

mystery(n/2);

System.out.print(", " + n);

}

}

12. What is displayed by mystery(7);

public void mystery(int n)

{

if (n <= 1)

System.out.print(n);

else

{

mystery(n-2);

System.out.print(", " + n);

}

}

13. What is displayed by mystery(8);

public void mystery(int n)

{

if (n <= 1)

System.out.print(n);

else

{

mystery(n-2\*n);

System.out.print(", " + n);

}

}

1. What is displayed by mystery(1);

public void mystery(int n)

{

if (n >= 24)

System.out.print(n);

else

{

mystery(3\*n);

System.out.print(", " + n);

}

}

15. What is displayed by mystery(1);

public void mystery(int n)

{

if (n >= 15)

System.out.print(n);

else

{

mystery(2+n);

System.out.print(", " + n);

}

}

16. What is the value of mystery(1);

public int mystery(int n)

{

if (n >= 9)

return n;

else

return n + mystery(n+1);

}

17. What is the value of mystery(5);

public int mystery(int n)

{

if (n < 0)

return n;

else

return n - mystery(n-1);

}

18. What is the value of mystery(7);

public int mystery(int n)

{

if (n < 0)

return n;

else

return n + mystery(n-2);

}

19. What is the value of mystery(6);

public int mystery(int n)

{

if (n >= 15)

return 1;

else

return 2 \* mystery(n-1);

}

20. What is the value of mystery(6);

public int mystery(int n)

{

if (n <= 0)

return 1;

else

return 2 \* mystery(n-1);

}