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| --- | --- | --- |
| **APCS Exposure Java** | **Exercises 19.07** | **Date:** |
| **Name:** | | **Period:** |

**Exercise 01**

Determine that **m1(7) = 25**

|  |  |  |
| --- | --- | --- |
| public static int m1(int n)  {  if (n == 1)  return 25;  else  return m1(n-1);  } | | |
| CALL # | n | Method m1 returns |
|  |  |  |
|  | | |

**Exercise 02**

Determine that **m2(3)** causes a **Stack Overflow** error.

|  |  |  |
| --- | --- | --- |
| public static int m2(int n)  {  if (n == 1)  return 25;  else  return m2(n+1);  } | | |
| CALL # | n | Method m2 returns |
|  |  |  |
|  | | |

**Exercise 03**

Determine that **m3(6)** = **45**

|  |  |  |
| --- | --- | --- |
| public static int m3(int n)  {  if (n == 1)  return 25;  else  return n + m3(n-1);  } | | |
| CALL # | n | Method m3 returns |
|  |  |  |
|  | | |

**Exercise 04**

Determine that **m4(1)** = **21**

|  |  |  |
| --- | --- | --- |
| public static int m4(int n)  {  if (n == 6)  return n;  else  return n + m4(n+1);  } | | |
| CALL # | n | Method m4 returns |
|  |  |  |
|  | | |

**Exercise 05**

Determine that **m5(7)** = **5040**

|  |  |  |
| --- | --- | --- |
| public static int m5(int n)  {  if (n < 2)  return 1;  else  return n \* m5(n-1);  } | | |
| CALL # | n | Method m5 returns |
|  |  |  |
|  | | |

**Exercise 06**

Determine that **m6(7,8)** = **56**

|  |  |  |  |
| --- | --- | --- | --- |
| public static int m6(int a, int b)  {  if (a == 0)  return 0;  else  return b + m6(a-1,b);  } | | | |
| CALL # | a | b | Method m6 returns |
|  |  |  |  |
|  | | | |

**Exercise 07**

Determine that **m7(4,5)** = **625**

|  |  |  |  |
| --- | --- | --- | --- |
| public static int m7(int a, int b)  {  if (a == 0)  return 1;  else  return b \* m7(a-1,b);  } | | | |
| CALL # | a | b | Method m7 returns |
|  |  |  |  |
|  | | | |

**Exercise 08**

Determine that **m8(4,5)** = **1024**

|  |  |  |  |
| --- | --- | --- | --- |
| public static int m8(int a, int b)  {  if (b == 0)  return 1;  else  return a \* m8(a,b-1);  } | | | |
| CALL # | a | b | Method m8 returns |
|  |  |  |  |
|  | | | |

**Exercise 09**

Determine that **m9(9,1)** = **20**

|  |  |  |  |
| --- | --- | --- | --- |
| public static int m9(int a, int b)  {  if (a < b)  return 5;  else  return b + m9(a-1,b+1);  } | | | |
| CALL # | a | b | Method m9 returns |
|  |  |  |  |
|  | | | |

**Exercise 10**

Determine that **m10(7,8)** = **15**

|  |  |  |  |
| --- | --- | --- | --- |
| public static int m10(int a, int b)  {  if (b == 0)  return a;  else  return 1 + m10(a,b-1);  } | | | |
| CALL # | a | b | Method m10 returns |
|  |  |  |  |
|  | | | |

**Exercise 11**

Determine that **m11(770,1001) = 77**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| public static int m11(int a, int b)  {  int c;  c = a % b;  if (c == 0)  return b;  else  return m11(b,c);  } | | | | |
| CALL # | a | b | c | Method m11 returns |
|  |  |  |  |  |
|  | | | | |

**Exercise 12**

Determine that **m12(100,90) == 179**

|  |  |  |  |
| --- | --- | --- | --- |
| public static int m12(int a, int b)  {  if (a < b)  return a + b;  else  return m12(a-1,b);  } | | | |
| CALL # | a | b | Method m12 calls |
|  |  |  |  |
|  | | | |