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4:10-5:05

HW 9: Tracing References

1.

|  |  |
| --- | --- |
| ***Statement*** | ***Variable Values*** |
|  | m -> 143  k -> 70 |
| m.transferFrom(k); |  |
|  | m -> 70  k -> 0 |

2. Immutable types can’t have a transferFrom method because once their values are set they cannot change, unlike with the transferFrom method.

3.

a.

|  |  |
| --- | --- |
| ***Statement*** | ***Variable*** |
| **private static void** swap1(int i1, int i2) { |  |
|  | i1 = 7  i2 = 12 |
| int tmp = i1; |  |
|  | i1 = 7  i2 = 12  tmp = 7 |
| i1 = i2; |  |
|  | i1 = 12  i2 = 12  tmp = 7 |
| i2 = tmp; |  |
|  | i1 = 12  i2 = 7  tmp = 7 |
| } |  |
|  |  |
| String x = 7, y = 12; |  |
|  | x = 7  y = 12 |
| swap1(x, y); |  |
|  | x = 7  y = 12 |

b.

|  |  |
| --- | --- |
| ***Statement*** | ***Variable*** |
| **private static void** swap2(String s1, String s2) { |  |
|  | s1 = “legends”  s2 = “leaders” |
| String tmp = s1; |  |
|  | s1 = “legends”  s2 = “leaders”  tmp = “legends” |
| s1 = s2; |  |
|  | s1 = “leaders”  s2 = “leaders”  tmp = “legends” |
| s2 = tmp; |  |
|  | s1 = “legends”  s2 = “legends”  tmp = “legends” |
| } |  |
|  |  |
| String x = "legends", y = "leaders"; |  |
|  | x -> “legends”  y -> “leaders” |
| swap2(x, y); |  |
|  | x -> “leaders”  y -> “legends” |

c.

|  |  |
| --- | --- |
| ***Statement*** | ***Variable*** |
| **private static void** swap3(NaturalNumber n1, NaturalNumber n2) { |  |
|  | n1 -> 41  n2 -> 78 |
| NaturalNumber tmp = n1; |  |
|  | n1 -> 41  n2 -> 78  tmp -> 41 |
| n1 = n2; |  |
|  | n1 -> 78  n2 -> 78  tmp -> 41 |
| n2 = tmp; |  |
|  | n1 -> 78  n2 -> 41  tmp -> 41 |
| } |  |
|  |  |
| NaturalNumber x = **new** NaturalNumber2(41), y = **new** NaturalNumber2(78); |  |
|  | x -> 41  y -> 78 |
| swap3(x, y); |  |
|  | x -> 78  y -> 41 |