# Homework - Programming Tracing

1. Trace through the following code segments and illustrate the output and memory.

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| --- | --- | --- |
|  | **Memory** | **Output** |
| int a = 3;  int b = 9;  System.out.println(b);  a = b + 2;  a = a + b;  System.out.println(b+3);  System.out.println(a); | |  |  | | --- | --- | | int a | int b | | ~~3~~ | 9 | | ~~11~~ |  | | 20 |  | |  |  | |  |  | |  |  | |  |  | | 9  12  20 |
| int ans = 10;  int res = 6;  int num;  num=ans + res;  System.out.println(num + 2);  res=num + 3;  System.out.println( res); | |  |  |  | | --- | --- | --- | | int ans | int res | int num | | 10 | 6 | 16 | |  | 19 |  | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |  |  |  | | 18  19 |
| int a, b, c;  double d, e, f;  a = 10;  b = 4;  d = a;  c = a / b;  e = a / b;  f = e / b;  a = a + 2 \* b;  d = b – d \* 2;  System.out.println(a);  System.out.println(b);  System.out.println(c);  System.out.println(d);  System.out.println(e); | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | int a | int b | int c | double d | double e | double f | | ~~10~~ | 4 | 2 | ~~10.0~~ | 2.5 | 0.625 | | 18 |  |  | -16.0 |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | | 18  4  2  -16.0  2.5 |

1. To switch the values contained in the variables x and y, a programmer wrote the following segment:

x = y;

y = x;

* 1. If, before execution of the segment, x contains the value 7 and y contained the value 4, what value would each have after the segment was performed?
     + x = 4
     + y = 4
  2. Rewrite the segment so that it performs the intended task correctly.

Reference for question 2

Carter, John. An Introduction To Computer Science Using Java. Toronto: University of Toronto Press, 2003