Work Time: 25min

Please copy the subjects and then close your laptops.

Default (1p).

1 (3p). Given the following Java collection:

List<Integer> numbers = Arrays.asList(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14,15);

Using Java functional style (Java streams), please write a Java stream program that is doing the following

a) Eliminate all the numbers which are multiple of 3 or multiple of 7.

b) Transform each remaining number into its predecessor multiplied by 11 (e.g., 4 is transformed into 33).

c) Compute the sum modulo 5 of the remaining numbers.

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Solution:

Step 1: Remove all numbers that are multiples of 3 or 7.

- The numbers divisible by 3 are: {3, 6, 9, 12, 15}
- The numbers divisible by 7 are: {7, 14}
- The numbers remaining after removal: {1, 2, 4, 5, 8, 10, 11}

Step 2: Transform each remaining number into its predecessor multiplied by 11.

- (1 - 1) * 11 = 0
- (2 - 1) * 11 = 11
- (4 - 1) * 11 = 33
- (5 - 1) * 11 = 44
- (8 - 1) * 11 = 77
- (10 - 1) * 11 = 99
- (11 - 1) * 11 = 110

Resulting list: {0, 11, 33, 44, 77, 99, 110}

Step 3: Compute the sum modulo 5.

- Sum = 0 + 11 + 33 + 44 + 77 + 99 + 110 = 374
- 374 % 5 = 4

Final result: 4

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2 (3p). Given the following four classes in Java:

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