Activity 3.7.4 Standard Algorithms

Complete parts A and B for each algorithm shown below.

Part A. Describe the purpose of each algorithm.

Given: `int[] arr = {1, 2, 0, 3, 2, 4, 2, 1, 0, 2, 0, 1, 3, 2};`

Part B. Convert each array algorithm to an equivalent ArrayList algorithm using appropriate variable names and the best iteration construct.

Given: `ArrayList<Integer> arrList = new ArrayList<Integer>();`
with values `[1, 2, 0, 3, 2, 4, 2, 1, 0, 2, 0, 1, 3, 2]`

	Algorithm	Purpose

1.	`int x = 0;`
	`for (int a : arr)`
	`{`
	`  if (a == 0)`
	`  x++;`
	`}`
	`return x;`	

2.	`int y = arr[0];`
	`for (int j = 1; j < arr.length; j++)`
	`{`
	`  if (arr[j] < y)`
	`  y = arr[j];`
	`}`
	`return y;`	

	Algorithm	Purpose

3.	`double y = 0;`
	`for (double a : arr)`
	`  y += a;`
	`return y / arr.length;`	

4.	`int x = 0;`
	`boolean b = false;`
	`while (!b && (x < arr.length))`
	`{`
	`  if (arr[x] == 0 )`
	`  b = true;`
	`  x++;`
	`}`
	`return b;`	

5.	`for (int j = 0; j < arr.length/2; j++)`
	`{`
	`  int a = arr[j];`
	`  arr[j] = arr[arr.length - j - 1];`
	`  arr[arr.length - j - 1] = a;`
	`}`
	`return arr;`	

	Algorithm	Purpose

6.	`int x = 0;`
	`for (int n = 0; n < arr.length; n++)`
	`  x += arr[n];`
	`return x;`	

7.	`int x = 0;`
	`int y = 0;`
	`int[] z = new int[arr.length];`
	`for (int a : arr)`
	`{`
	`  z[a]++;`
	`  if (z[a] > x)`
	`  {`
	`  x = z[a];`
	`  y = a;`
	`  }`
	`}`
	`return y;`	

	Algorithm	Purpose

8.	`for (int i = 0; i < arr.length - 1; i += 2)`
	`{`
	`  int a = arr[i];`
	`  arr[i] = arr[i+1];`
	`  arr[i+1] = a;`
	`}`
	`return arr;`	

9.	`boolean b = true;`
	`for (int a : arr)`
	`{`
	`  if (a <= 0)`
	`  b = false;`
	`}`
	`return b;`	

	Algorithm	Purpose

10.	`for (int k = arr.length; k > 1; k--)`
	`{`
	`  int a = arr[k-2];`
	`  arr[k-2] =  arr[k-1];`
	`  arr[k-1] = a;`
	`}`
	`return arr;`	

11.	`int n = arr[0];`
	`for (int i = 1; i < arr.length; i++)`
	`{`
	`  if (arr[i] > n)`
	`  n = arr[i];`
	`}`
	`return n;`	