EGE UNIVERSITY

DEPARTMENT OF COMPUTER ENGINEERING

ALGORITHMS AND PROGRAMMING-I

REPORT OF THE PROJECT-1

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HOW MY CODE WORKS

In the code, my main goal was to detect the base weight in the first 3 taws. There were only three possible combinations (A-A-A, A-B-B, A-B-C) (A, B and C represent different weights) so I saved the first and second weights as base_weight and temp_base_weight_2. If the first 2 taws were at equal weight (AA), the base weight is them. If they aren't, I check at the 3rd cycle of the for loop that if the 3rd taw is equal to neither the base weight nor temp_base_weight_2 (ABB or ABC). So, with these operations, I get the base weight. After that, all I did was compare the following weights to the base weight and count all the statistics in different variables.

TESTING MY CODE

To test my program, I created an Excel file and entered data from 18 boxes including 225 taws in total. I tried to test the combinations which are more likely to create a problem/bug in my code. There are 4 all-equal, 6 defect, 4 lighter and 4 heavier boxes on test table. I calculated the expected outputs myself and compared the results to the output of my program. I added my testing table and result of comparison below.

	TAWS	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15
B1	14	400	400	400	400	400	400	400	400	400	400	400	400	400	400	
B2	15	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350
B3	11	150	150	150	150	150	150	150	150	150	150	150				
B4	10	68	68	68	68	68	68	68	68	68	68					
B5	12	340	340	340	340	340	340	310	340	340	300	300	300			
B6	13	188	188	188	188	188	200	200	200	200	200	200	200	200		
B7	10	230	200	230	230	230	230	230	230	250	230					
B8	11	510	520	530	530	530	530	530	530	530	530	530				
B9	12	69	69	70	69	69	69	70	69	69	69	69	69			
B10	11	151	150	150	150	150	150	150	150	150	160	160				
B11	14	448	448	400	448	448	448	448	448	448	448	448	448	448	448	
B12	12	571	632	632	632	632	632	632	632	632	632	632	632			
B13	15	877	633	877	877	877	877	877	877	877	877	877	877	877	877	877
B14	11	253	253	253	253	253	253	253	253	244	253	253				
B15	13	940	940	1050	940	940	940	940	940	940	940	940	940	940		
B16	12	1800	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000			
B17	14	305	310	305	305	305	305	305	305	305	305	305	305	305	305	
B18	15	382	382	382	382	382	382	382	382	382	382	382	382	382	382	390

Green boxes represent the base weight, yellow ones represent the first defect and red ones represent the second defect meaning that the box is returned.

COMPARISING THE EXPECTED AND GATHERED DATA

All the gathered data was identical to the expected one:

Number of boxes with manufacturing defects: 6

Their percentage in all boxes: 33.33%

Accepted taws: 156

Returned taws: 69

Number of boxes in which all taws are of equal weight: 4

Number of boxes in which 1 taw is heavier than the others: 4

Number of boxes in which 1 taw is lighter than the others: 4

Their percentages in boxes without manufacturing defects:

All equal: 33.33%, One heavier: 33.33%, One lighter: 33.33%

Averages of weight difference values (1 taw is heavier): 230.75

Averages of weight difference percentages (1 taw is heavier):23.86%

Averages of weight difference values (1 taw is lighter): 90.50

Averages of weight difference percentages (1 taw is lighter):12.94%

Among the all equal boxes, number of taws in the box with the largest number of taws: 15

Weight of a taw in that box: 350

Among the all equal boxes, number of taws in the box with the heaviest taws: 14

Weight of a taw in that box: 400

Statistics of the weight difference where the value of the difference is largest:

The value: 800

Percentage: 80.00%

Sign: Heavier

Statistics of the weight difference where the value of the difference is smallest:

The value: 5

Percentage: 1.64%

Sign: Heavier