Lab03: Software Testing

[3] Test-Driven Development

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Có 18 testcase được thiết kế

No.	input					Tester	Điểm kỳ vọng	**Kết quả**
	số bài lab	điểm	nộp trễ	buổi đi học	Điểm TB			
1	4	6,7,8.5,9	0,0,0,0	13	7,5	Trần Duy Thái	7,5	Pass
2	6	6,7,8.5,10	0,0,0,0	9	ERROR	Trần Duy Thái	ERROR	Pass
3	3	4,5,6	0,0,0	11	5	Trần Duy Thái	5	Pass
4	5	4,5,6,7,8	0, 0, 1, 0, 1	9	5	Trần Duy Thái	5	Pass
5	3	8,9,11	0,0,1	10	ERROR	Trần Duy Thái	ERROR	Pass
6	3	8,9,-1	1, 1, 1	9	ERROR	Trần Duy Thái	ERROR	Pass
7	3	8,9,10	2,0, 0	10	ERROR	Trần Duy Thái	ERROR	Pass
8	4	5,8,9,10	1,0, 0, 0	5	7	Trần Duy Thái	7	Pass
9	4	1,2,3,4	1,0, 0, 0	10	2.5	Trần Duy Thái	2.5	Pass
10	4	1,2,3,4	1,0, 0, 0	16	ERROR	Trần Duy Thái	ERROR	Pass
11	4	1,2,3,4	1,0, 0, 0	-1	ERROR	Trần Duy Thái	ERROR	Pass
12	5	5,6,7,8	1,0, 0, 1	1	ERROR	Trần Duy Thái	ERROR	Pass

13	5	5,6,7,8,9	1,1,0, 0, 1	0	5.5	Trần Duy Thái	5.5	Pass
14	1	1	1	15	1	Trần Duy Thái	1	Pass
15	0	1	1	15	ERROR	Trần Duy Thái	ERROR	Pass
16	4	1,2,3,4	0,0,0,0	15	2.5	Trần Duy Thái	2.5	Pass
17	4	6,5,7,4	0,0,0,0	9	5	Trần Duy Thái	5	Pass
18	5	1,2,3,4,5	0,0,0,0	10	ERROR	Trần Duy Thái	ERROR	Pass

Nội dung file code (cùng với homework_run_test.h)

```
#include "homework_run_test.h"
#include <math.h>
#include <stdio.h>
#include <stdlib.h>
#define ERROR -1

float roundScore(float num) { return round(2. * num) / 2.; }

float average(int lab, float score[], int late[]) {
  int temp_late = 0;
  for (int i = 0; i < lab; ++i) {
    if (late[i] == 1) {
      ++temp_late;
      switch (temp_late) {
      case 1:
      case 2: {
        score[i] *= 0.9;
        break;
      }
      case 3: {
        score[i] *= 0.7;
        break;
      }
      default:
        score[i] = 0;
        break;
      }
    }
  }
  float sum = 0;
  for (int i = 0; i < lab; ++i) {
    sum += score[i];
  }
  float avg = sum / lab;
  return avg;
}

float calculatePracticeScore(int lab, float lab_score[], int late[],
                             int attendance) {
  if (lab <= 0 || lab > 5) {
    return ERROR;
```

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  }
  if (attendance > 15 || attendance < 0) {
    return ERROR;
  }
  for (int i = 0; i < lab; ++i) {
    if (lab_score[i] < 0 || lab_score[i] > 10 ||
        (late[i] != 0 && late[i] != 1)) {
      return ERROR;
    }
  }
  float avg = average(lab, lab_score, late);
  if (avg > 5 && attendance < 10) {
    avg = avg * 0.9;
  }
  avg = roundScore(avg);
  return avg;
}

int main() {
  homework_run_test(1, calculatePracticeScore(4, (float[]){6, 7, 8.5, 9},
(int[]){0, 0, 0, 0}, 13), 7.5);
  homework_run_test(2, calculatePracticeScore(6, (float[]){6, 7, 8.5, 9},
(int[]){0, 0, 0, 0}, 9), ERROR);
  homework_run_test(3, calculatePracticeScore(3, (float[]){4,5,6},
(int[]){0, 0, 0}, 11), 5);
  homework_run_test(4, calculatePracticeScore(5, (float[]){4,5,6,7,8},
(int[]){0, 0, 1, 0, 1}, 9), 5);
  homework_run_test(5, calculatePracticeScore(3, (float[]){8,9,11},
(int[]){0, 0, 1}, 10), ERROR);
  homework_run_test(6, calculatePracticeScore(3, (float[]){8,9,-1},
(int[]){1, 1, 1}, 9), ERROR);
  homework_run_test(7, calculatePracticeScore(3, (float[]){8,9,10},
(int[]){2, 0, 0}, 10), ERROR);
  homework_run_test(8, calculatePracticeScore(4, (float[]){5,8,9,10},
(int[]){1,0, 0, 0}, 5), 7);
  homework_run_test(9, calculatePracticeScore(4, (float[]){1,2,3,4},
(int[]){1,0, 0, 0}, 10), 2.5);
  homework_run_test(10, calculatePracticeScore(4, (float[]){1,2,3,4},
(int[]){1,0, 0, 0}, 16), ERROR);
  homework_run_test(11, calculatePracticeScore(4, (float[]){1,2,3,4},
(int[]){1,0, 0, 0}, -1), ERROR);
```

```
  homework_run_test(12, calculatePracticeScore(5, (float[]){5,6,7,8},
(int[]){1,0, 0, 1}, 1), ERROR);
  homework_run_test(13, calculatePracticeScore(5, (float[]){5,6,7,8,9},
(int[]){1,1,0, 0, 1}, 0), 5.5);
  homework_run_test(14, calculatePracticeScore(1, (float[]){1}, (int[]){1},
15), 1);
  homework_run_test(15, calculatePracticeScore(0, (float[]){1}, (int[]){1},
15), ERROR);
  homework_run_test(16, calculatePracticeScore(4, (float[]){1,2,3,4},
(int[]){0,0,0,0}, 15), 2.5);
  homework_run_test(17, calculatePracticeScore(4, (float[]){6,5,7,4},
(int[]){0,0,0,0}, 9), 5);
  homework_run_test(18, calculatePracticeScore(5, (float[]){1,2,3,4,5},
(int[]){0,0,0,0}, 10), ERROR);
  return 0;
}
```

Kết quả thực thi chương trình:

```
No. 1: PASS
No. 2: PASS
No. 3: PASS
No. 4: PASS
No. 5: PASS
No. 6: PASS
No. 7: PASS
No. 8: PASS
No. 9: PASS
No.10: PASS
No.11: PASS
No.12: PASS
No.13: PASS
No.14: PASS
No.15: PASS
No.16: PASS
No.17: PASS
No.18: PASS
```