

0716 実行結果

strc-1.c

code

```
#include <stdio.h>
#include <string.h>

struct data_struct {
    int No;
    char Name[128];
    int Score;
    char Grade;
};

int main() {
    struct data_struct data;
    data.No = 1;
    strcpy(data.Name, "James");
    data.Score = 78;
    data.Grade = 'B';
    printf(" No. | Name | Score | Grade |\n");
    printf("  %1d | %5s | %2d  |  %c  |\n", data.No, data.Name, data.Score,
data.Grade);
    return 0;
}
```

result

Test passed

入力:

出力:

No.	Name	Score	Grade
1	James	78	B

=====

- Passed: 1
- Failed: 0

strc-2.c

code

```
#include <stdio.h>
#include <string.h>

struct data_struct {
    int No;
    char Name[128];
    int Score;
    char Grade;
};

int main() {
    struct data_struct data[4] = {
        {1, "James", 78, 'B'},
        {2, "John", 92, 'A'},
        {3, "Mary", 85, 'A'},
        {4, "Susan", 78, 'B'}
    };

    printf(" No. | Name | Score | Grade |\n");
    for (int i = 0; i < 4; i++) {
        printf(" %1d | %5s | %2d | %c |\n", data[i].No, data[i].Name,
data[i].Score, data[i].Grade);
    }
    return 0;
}
```

result

Test passed

入力:

出力:

No.	Name	Score	Grade
1	James	78	B
2	John	92	A
3	Mary	85	A
4	Susan	78	B

=====

- Passed: 1
- Failed: 0

strc-3.c

code

```

#include <stdio.h>
#include <string.h>

struct data_struct {
    int No;
    char Name[128];
    int Score_math;
    int Score_english;
    float Average;
};

int main() {
    struct data_struct data[6] = {
        {1, "James", 78, 67, 0.0},
        {2, "John", 92, 82, 0.0},
        {3, "Mary", 85, 79, 0.0},
        {4, "Susan", 78, 81, 0.0},
        {5, "Brian", 72, 82, 0.0},
        {6, "Ruth", 84, 77, 0.0}
    };
    for (int i = 0; i < 6; i++) {
        data[i].Average = (data[i].Score_math + data[i].Score_english) / 2.0;
    }
    printf(" No. | Name | Math. | Eng. | Ave. |\n");
    for (int i = 0; i < 6; i++) {
        printf(" %1d | %5s | %2d | %2d | %.1f |\n",
            data[i].No, data[i].Name,
            data[i].Score_math, data[i].Score_english,
            data[i].Average);
    }
    return 0;
}

```

result

Test passed

入力:

出力:

No.	Name	Math.	Eng.	Ave.
1	James	78	67	72.5
2	John	92	82	87.0
3	Mary	85	79	82.0
4	Susan	78	81	79.5
5	Brian	72	82	77.0
6	Ruth	84	77	80.5

=====

- Passed: 1
- Failed: 0

strc-4.c

code

```
#include <stdio.h>
#include <string.h>
#include <math.h>

struct data_struct {
    char Name[128];
    int Score;
};

int main() {
    FILE *fp = fopen("データ構造とアルゴリズムI/0716/data.txt", "r");
    if (fp == NULL) {
        printf("Failed to open data.txt\n");
        return 1;
    }

    struct data_struct data[50];
    int i = 0;
    int sigma_score = 0;

    char tmp_name[128];
    int tmp_score;
    while (fscanf(fp, "%s %d", tmp_name, &tmp_score) == 2) {
        strcpy(data[i].Name, tmp_name);
        data[i].Score = tmp_score;
        sigma_score += tmp_score;
        i++;
    }

    fclose(fp);

    float average_score = (float)sigma_score / i;
    printf("Average Score: %.2f\n", average_score);

    float variance = 0.0f;
    for (int j = 0; j < i; j++) {
        float diff = data[j].Score - average_score;
        variance += diff * diff;
    }
    variance /= i;
    float standard_deviation = sqrt(variance);
    printf("Standard Deviation: %.2f\n", standard_deviation);

    printf("Students with scores 85 or above:\n");
    printf("  Name | Score |\n");
    int count = 0;
    for (int j = 0; j < i; j++) {
        if (data[j].Score >= 85) {
            printf("%7s | %d   |\n", data[j].Name, data[j].Score);
            count++;
        }
    }
    printf("Total students with scores 85 or above: %d\n", count);
}
```

result

Test passed

入力:

出力:

```
Average Score: 78.54
Standard Deviation: 6.97
Students with scores 85 or above:
  Name | Score |
George | 93    |
Jacob  | 85    |
Mark   | 85    |
Mary   | 97    |
Betty  | 90    |
Karen  | 86    |
Smith  | 88    |
Ken    | 86    |
Sharon | 89    |
Laura  | 98    |
Sarah  | 87    |
Total students with scores 85 or above: 11
```

=====

- Passed: 1
- Failed: 0