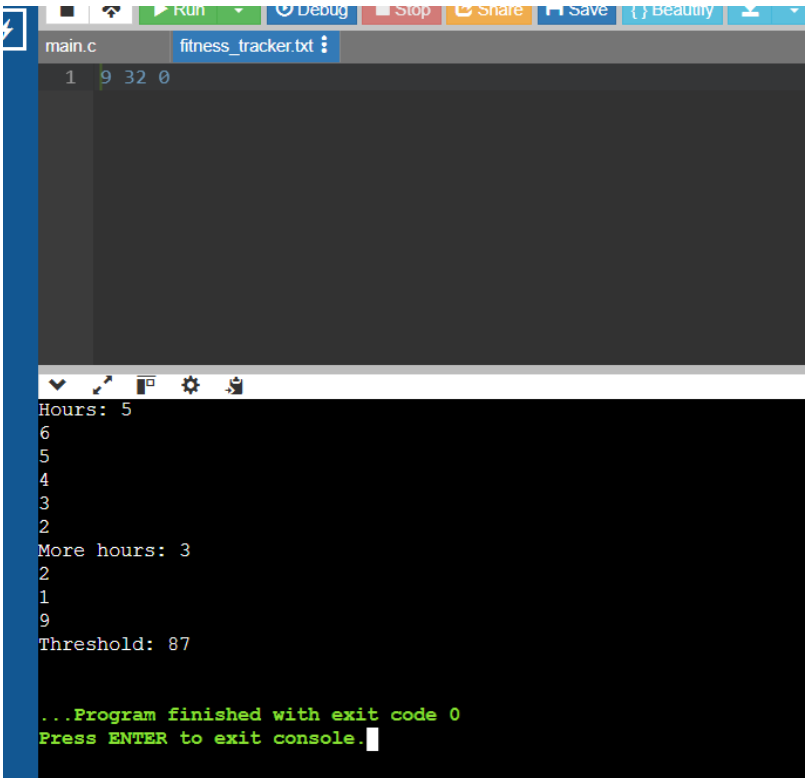
PF lab 12 Asharib Faisal 25k-2013

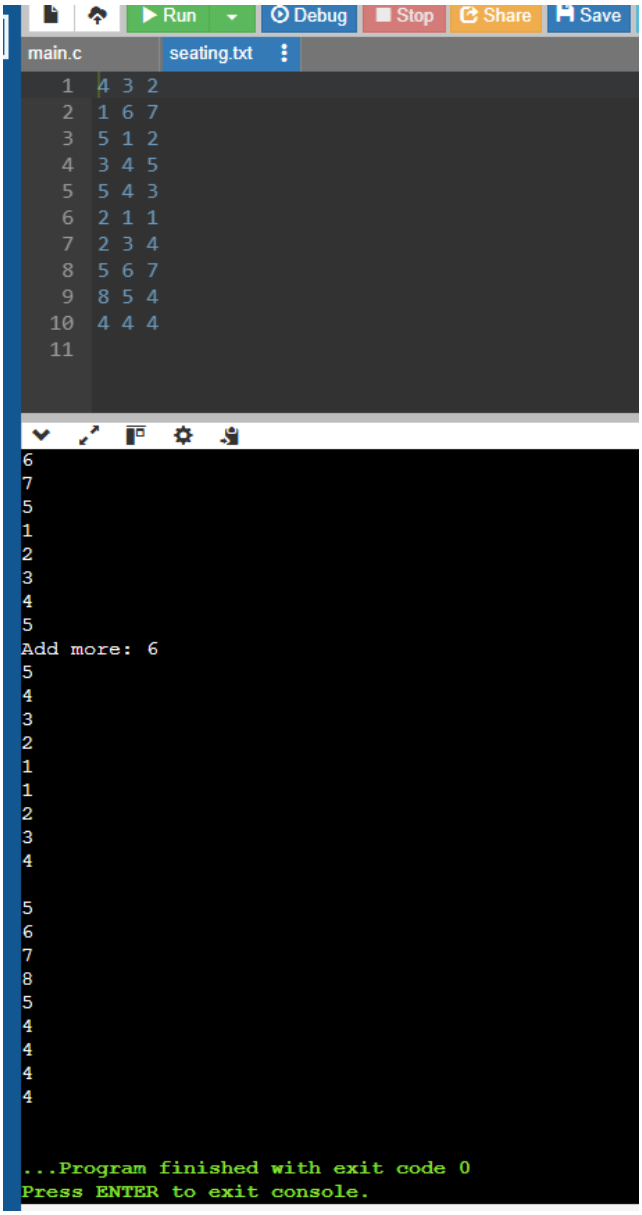
Q1

```c
#include <stdio.h>
#include <stdlib.h>


int main(int argc, char *argv[]) {
    return 0;#include <stdio.h>
#include <stdlib.h>

int main() {
    int n, add, threshold;
    printf("Hours: ");
    scanf("%d", &n);

    int *steps = malloc(n * sizeof(int));

    for (int i = 0; i < n; i++)
        scanf("%d", &steps[i]);

    printf("More hours: ");
    scanf("%d", &add);

    steps = realloc(steps, (n + add) * sizeof(int));

    for (int i = n; i < n + add; i++)
        scanf("%d", &steps[i]);

    n += add;

    printf("Threshold: ");
    scanf("%d", &threshold);

    int max = steps[0], total = 0, above = 0;
    for (int i = 0; i < n; i++) {
        if (steps[i] > max) max = steps[i];
        if (steps[i] > threshold) above++;
        total += steps[i];
    }

    FILE *f = fopen("fitness_tracker.txt", "w");
    fprintf(f, "%d %d %d", max, total, above);
    fclose(f);

    free(steps);
}
```


Run
Debug
Stop
Share
Save
{ } Beautify
main.c
fitness_tracker.txt
1 9 32 0
Hours: 5
6
5
4
3
2
More hours: 3
2
1
9
Threshold: 87
...Program finished with exit code 0
Press ENTER to exit console.

Q2

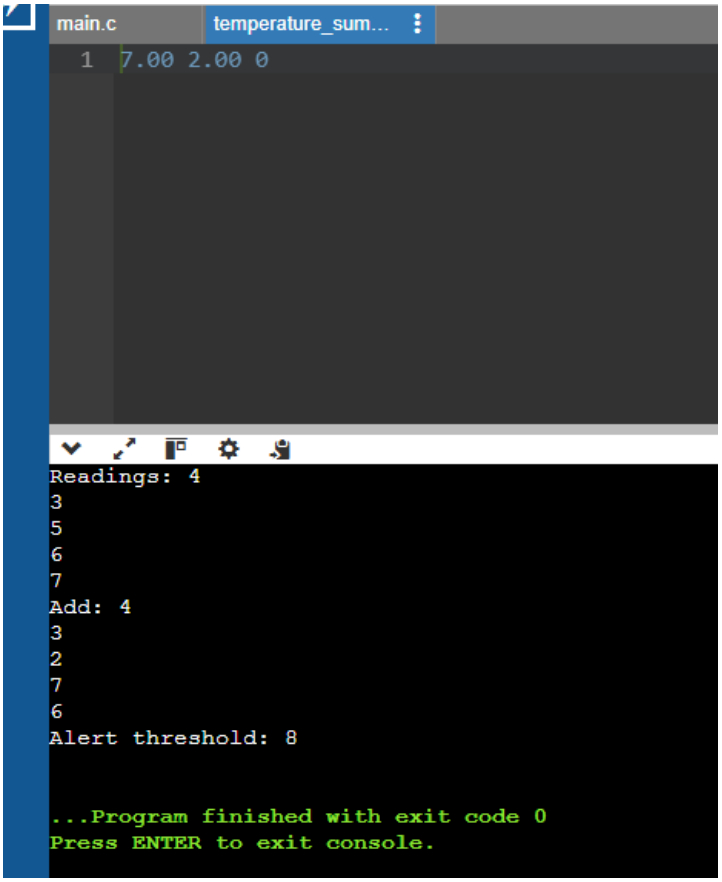
```c

#include <stdio.h>
#include <stdlib.h>
#include <ctype.h>

int check(char *s, int i) {
    if (s[i] == '\0') return 1;
    if (!isalnum(s[i])) return 0;
    return check(s, i+1);
}

typedef struct {
    char name[50];
    char roll[20];
    int seat;
} Seat;

int main() {
    int n, add;
    printf("Students: ");
    scanf("%d", &n);

    Seat *s = malloc(n * sizeof(Seat));

    for (int i = 0; i < n; i++) {
        scanf("%s %s %d", s[i].name, s[i].roll, &s[i].seat);
        while (!check(s[i].roll, 0))
            scanf("%s", s[i].roll);
    }

    printf("Add more: ");
    scanf("%d", &add);

    s = realloc(s, (n + add) * sizeof(Seat));

    for (int i = n; i < n + add; i++) {
        scanf("%s %s %d", s[i].name, s[i].roll, &s[i].seat);
        while (!check(s[i].roll, 0))
            scanf("%s", s[i].roll);
    }

    FILE *f = fopen("seating.txt", "w");
    for (int i = 0; i < n + add; i++)
        fprintf(f, "%s %s %d\n", s[i].name, s[i].roll, s[i].seat);

    fclose(f);
    free(s);
}

```


Run
Debug
Stop
Share
Save
main.c
seating.txt
1 4 3 2
2 1 6 7
3 5 1 2
4 3 4 5
5 5 4 3
6 2 1 1
7 2 3 4
8 5 6 7
9 8 5 4
10 4 4 4
11
6
7
5
1
2
3
4
5
Add more: 6
5
4
3
2
1
1
2
3
4
5
6
7
8
5
4
4
4
4
...Program finished with exit code 0
Press ENTER to exit console.

Q3

main.c

```c
#include <stdio.h>
#include <stdlib.h>

int main() {
    int n, add, th;
    printf("Readings: ");
    scanf("%d", &n);

    float *t = malloc(n * sizeof(float));

    for (int i = 0; i < n; i++)
        scanf("%f", &t[i]);

    printf("Add: ");
    scanf("%d", &add);

    t = realloc(t, (n + add) * sizeof(float));

    for (int i = n; i < n + add; i++)
        scanf("%f", &t[i]);

    n += add;

    printf("Alert threshold: ");
    scanf("%d", &th);

    float max = t[0], min = t[0];
    int count = 0;

    for (int i = 0; i < n; i++) {
        if (t[i] > max) max = t[i];
        if (t[i] < min) min = t[i];
        if (t[i] > th) count++;
    }

    FILE *f = fopen("temperature_summary.txt", "w");
    fprintf(f, "%.2f %.2f %d", max, min, count);
    fclose(f);

    free(t);
}
```



Q4

```c
#include <stdio.h>
#include <stdlib.h>

typedef struct {
    char title[50];
    char id[20];
    char time[20];
    int due;
} Log;

int main() {
    int n;
    scanf("%d", &n);

    Log *a = malloc(n * sizeof(Log));
    FILE *f = fopen("checkout_log.csv", "a");

    for (int i = 0; i < n; i++) {
        scanf("%s %s %s %d", a[i].title, a[i].id, a[i].time, &a[i].due);
        fprintf(f, "%s,%s,%s,%d\n", a[i].title, a[i].id, a[i].time, a[i].due);
    }

    fclose(f);
    free(a);
}
```

Q5

```c
#include <stdio.h>
#include <stdlib.h>

int main() {
    float rate;
    printf("Rate: ");
    scanf("%f", &rate);

    int n;
    printf("Rentals: ");
    scanf("%d", &n);

    float *d = malloc(n * sizeof(float));

    for (int i = 0; i < n; i++)
        scanf("%f", &d[i]);

    float total = 0, max = d[0];

    FILE *f = fopen("Rental_Invoices.txt", "w");

    for (int i = 0; i < n; i++) {
        float cost = d[i] * rate;
        fprintf(f, "%.2f %.2f\n", d[i], cost);
        total += d[i];
        if (d[i] > max) max = d[i];
    }

    fprintf(f, "Total %.2f Max %.2f", total, max);
    fclose(f);

    free(d);
}
```

main.c | Rental_Invoices.txt

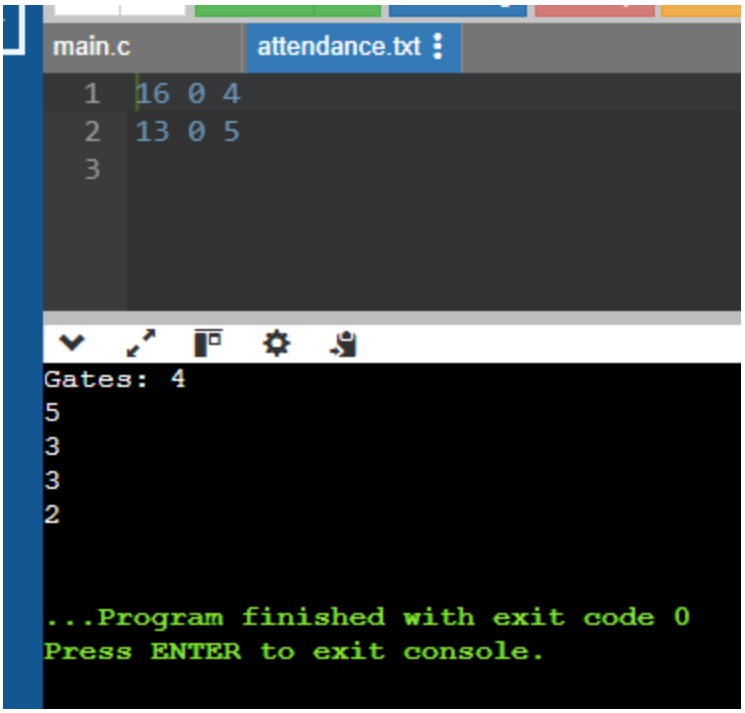
```
1  6.00 60.00
2  7.00 70.00
3  8.00 80.00
4  5.00 50.00
5  4.00 40.00
6  Total 30.00 Max 8.00
```

```
Rate: 10
Rentals: 5
6
7
8
5
4


...Program finished with exit code 0
Press ENTER to exit console.
```

Q6

main.c

```c
#include <stdio.h>
#include <stdlib.h>

int sum(int *a, int i, int n) {
    if (i == n) return 0;
    return a[i] + sum(a, i+1, n);
}

int main() {
    int n;
    printf("Gates: ");
    scanf("%d", &n);

    int *g = malloc(n * sizeof(int));

    for (int i = 0; i < n; i++)
        scanf("%d", &g[i]);

    int total = sum(g, 0, n);

    int max = g[0], gate = 0;
    for (int i = 0; i < n; i++)
        if (g[i] > max) { max = g[i]; gate = i; }

    FILE *f = fopen("attendance.txt", "a");
    fprintf(f, "%d %d %d\n", total, gate, max);
    fclose(f);

    free(g);
}
```


main.c
attendance.txt
1 16 0 4
2 13 0 5
3
Gates: 4
5
3
3
2
...Program finished with exit code 0
Press ENTER to exit console.

Q7

main.c

```c
#include <stdio.h>
#include <stdlib.h>

typedef struct {
    char name[50];
    int qty;
    float price;
} Med;

int main() {
    int n;
    scanf("%d", &n);

    Med *m = malloc(n * sizeof(Med));

    for (int i = 0; i < n; i++)
        scanf("%s %d %f", m[i].name, &m[i].qty, &m[i].price);

    float total = 0;

    FILE *f = fopen("medicine_inventory.txt", "w");

    for (int i = 0; i < n; i++) {
        fprintf(f, "%s %d %.2f\n", m[i].name, m[i].qty, m[i].price);
        total += m[i].qty * m[i].price;
    }

    fprintf(f, "Total %.2f", total);
    fclose(f);

    free(m);
}
```

main.c | medicine_inventor...

```
4 2 1.00
3 4 5.00
6 5 4.00
Total 42.00
```

```
3
4
2
1

3
4
5
6
5
4


...Program finished with exit code 0
Press ENTER to exit console.
```