

امین ثابت اقدم

401655019

1.

```
#include <stdio.h>

int main()
{
    int code1, code2, code3, code4, code5;
    int score1, score2, score3, score4, score5;
    int max = 0;
    int second_max = 0;
    int second_max_code;
    printf("Enter student 1 code and score: ");
    scanf("%d %d", &code1, &score1);
    printf("Enter student 2 code and score: ");
    scanf("%d %d", &code2, &score2);
    printf("Enter student 3 code and score: ");
    scanf("%d %d", &code3, &score3);
    printf("Enter student 4 code and score: ");
    scanf("%d %d", &code4, &score4);
    printf("Enter student 5 code and score: ");
    scanf("%d %d", &code5, &score5);
    if (score1 > max)
    {
        second_max = max;
        max = score1;
        second_max_code = code1;
    }
    else if (score1 > second_max)
    {
        second_max = score1;
        second_max_code = code1;
    }
    if (score2 > max)
    {
        second_max = max;
        max = score2;
        second_max_code = code2;
    }
    else if (score2 > second_max)
    {
        second_max = score2;
        second_max_code = code2;
    }

    if (score3 > max)
    {
```

```
        second_max = max;
        max = score3;
        second_max_code = code3;
    }
    else if (score3 > second_max)
    {
        second_max = score3;
        second_max_code = code3;
    }

    if (score4 > max)
    {
        second_max = max;
        max = score4;
        second_max_code = code4;
    }
    else if (score4 > second_max)
    {
        second_max = score4;
        second_max_code = code4;
    }

    if (score5 > max)
    {
        second_max = max;
        max = score5;
        second_max_code = code5;
    }
    else if (score5 > second_max)
    {
        second_max = score5;
        second_max_code = code5;
    }

    printf("The student with the second highest score is %d with a score of %d\n", second_max_code, second_max);

    return 0;
}
```

out:

```
Enter student 1 code and score: 1
20
Enter student 2 code and score: 2
40
Enter student 3 code and score: 3
45
Enter student 4 code and score: 4
67
Enter student 5 code and score: 5
```

2

The student with the second highest score is 4 with a score of 45

2.

```
#include <stdio.h>

int main()
{
    int num, r, i;
    int b, a, statb;
    char ans;

    printf("please enter your number\n:");
    scanf("%d", &num);

    for (i = 1; i < 100000000; i++)
    {
        b = 2;
        a = i;
        statb = b;
        for (int j = 0; j < a; j++)
            b = b * statb;
        r = b - 1;

        if (num % r == 0)
        {
            b = 2;
            a = i - 1;
            statb = b;
            for (int j = 0; j < a; j++)
                b = b * statb;

            if (num / r == b)
            {
                printf("yes this number is perfect!");
                break;
            }
            else
            {
                printf("no this number is not perfect :(");
                break;
            }
        }
    }

    printf("\n\ndo you wanna continue?(Y,y,1,N,n,0)\n:");
    scanf(" %c", &ans);
    if (ans == 'Y' || ans == 'y' || ans == '1')
        main();
    else
```

```
        return 0;

    return 0;
}
```

out:

```
please enter your number
:6
yes this number is perfect!

do you wanna continue?(Y,y,1,N,n,0)
:y
please enter your number
:23
no this number is not perfect :(

do you wanna continue?(Y,y,1,N,n,0)
:y
please enter your number
:481
no this number is not perfect :(

do you wanna continue?(Y,y,1,N,n,0)
:n
```

3.

```
#include <stdio.h>
int main()
{
    int i, j;
    const char ch = '*';
    printf("you know whats gonna happen ;)\n\n ");
    for (i = 1; i <= 6; i++)
    {
        for (j = 1; j <= i; j++)
            printf("%c", ch);
        printf("\n");
    }
    return 0;
}
```

out:

you know whats gonna happen ;)

```
*  
**  
***  
****  
*****  
*****
```

4.

```
#include <stdio.h>  
  
int main()  
{  
    char color;  
    printf("Enter the first letter of a color: ");  
    scanf("%c", &color);  
    if (color >= 'a' && color <= 'z')  
    {  
        color = color - 'a' + 'A';  
    }  
    switch (color)  
    {  
    case 'R':  
        printf("Red\n");  
        break;  
    case 'O':  
        printf("Orange\n");  
        break;  
    case 'Y':  
        printf("Yellow\n");  
        break;  
    case 'G':  
        printf("Green\n");  
        break;  
    case 'B':  
        printf("Blue\n");  
        break;  
    case 'I':  
        printf("Indigo\n");  
        break;  
    case 'V':  
        printf("Violet\n");  
        break;  
    default:  
        printf("Invalid input\n");  
    }  
    return 0;  
}
```

out:

```
Enter the first letter of a color: R
Red
```

```
Enter the first letter of a color: y
Yellow
```

```
Enter the first letter of a color: r
Red
```

5.

```
#include <stdio.h>
int main()
{
    int n, a = 1, b = 1, i;
    unsigned int r;
    printf("here comes the fibo, but at first, tell me how many steps you
wanna go furthur?\n:");
    scanf("%d", &n);
    for (i = 2; i <= n; i++)
    {
        if (i % 2 == 0)
        {
            a = a + b;
        }
        if (i % 2 != 0)
        {
            b = a + b;
        }
    }
    if (i % 2 == 0)
        r = a;
    if (i % 2 != 0)
        r = b;
    printf("the n fibo you chose issss %llu", r);
    return 0;
}
```

out:

```
here comes the fibo, but at first, tell me how many steps you wanna go
furthur?
:6
the n fibo you chose issss 8↵
```

```
here comes the fibo, but at first, tell me how many steps you wanna go
furthur?
:100
the n fibo you chose issss 3314859971↵
```

6.

```
#include <stdio.h>
int main()
{
    int a, b, i = 0;
    printf("enter your 2 numbers\n:");
    scanf("%d%d", &a, &b);
    while (a >= b)
    {
        a = a - b;
        i++;
    }
    printf("\n%d", i);
    return 0;
}
```

out:

```
enter your 2 numbers
:6
2

3↵

---

enter your 2 numbers
:100
5

20↵
```

7.

basic:

```
#include <stdio.h>
int main()
{
    int en = 3;
    int enumber1, enumber2, enumber3;
    float eincome1, eincome2, eincome3;
    float tax1, tax2, tax3;
    float pure1, pure2, pure3;
    for (int i = 0; i < en; i++)
    {
        printf("please enter employee number %d code\n:", i + 1);
        if (i == 0)
            scanf("%d", &enumber1);
        if (i == 1)
            scanf("%d", &enumber2);
        if (i == 2)
            scanf("%d", &enumber3);

        printf("please enter employee number %d income\n:", i + 1);
        if (i == 0)
            scanf("%f", &eincome1);
        if (i == 1)
            scanf("%f", &eincome2);
        if (i == 2)
            scanf("%f", &eincome3);
    }
    for (int i = 0; i < en; i++)
    {
        if (i == 0)
        {
            if (eincome1 < 400000)
                tax1 = 0;
            if (eincome1 > 400001 && eincome1 < 500000)
                tax1 = eincome1 * 0.1;
            if (eincome1 > 500001 && eincome1 < 700000)
                tax1 = eincome1 * 0.15;
            if (eincome1 > 700001)
                tax1 = eincome1 * 0.17;
        }
        if (i == 1)
        {
            if (eincome2 < 400000)
                tax2 = 0;
            if (eincome2 > 400001 && eincome2 < 500000)
                tax2 = eincome2 * 0.1;
            if (eincome2 > 500001 && eincome2 < 700000)
                tax2 = eincome2 * 0.15;
            if (eincome2 > 700001)
                tax2 = eincome2 * 0.17;
        }
    }
}
```



```

    }
    if (i == 2)
    {
        if (eincome3 < 400000)
            tax3 = 0;
        if (eincome3 > 400001 && eincome3 < 500000)
            tax3 = eincome3 * 0.1;
        if (eincome3 > 500001 && eincome3 < 700000)
            tax3 = eincome3 * 0.15;
        if (eincome3 > 700001)
            tax3 = eincome3 * 0.17;
    }
}
pure1 = eincome1 - tax1;
pure2 = eincome2 - tax2;
pure3 = eincome3 - tax3;
int maxnum = -1;
for (int i = 0; i < en; i++)
{
    float current_pure_income;
    if (i == 0)
        current_pure_income = pure1;
    if (i == 1)
        current_pure_income = pure2;
    if (i == 2)
        current_pure_income = pure3;
    printf("employee with code %d has income of %f\n", i + enumber1 -
maxnum, current_pure_income);
    float max_pure_income;
    if (maxnum == -1)
        max_pure_income = current_pure_income;
    if (maxnum == -1)
        maxnum = i + enumber1 - maxnum;
    else
    {
        if (i == maxnum)
            max_pure_income = current_pure_income;
        else
        {
            if (current_pure_income > max_pure_income)
            {
                maxnum = i + enumber1 - maxnum;
                max_pure_income = current_pure_income;
            }
        }
    }
}
printf("and employee with code %d has the highest pure income of %f\n",
maxnum, maxnum == enumber1 ? pure1 : maxnum == enumber2 ? pure2
: pure3);
}

// this code is very basic because its for season 3 of the book, for more
/

```

advanced code please check 7adv.c

advanced:

```
#include <stdio.h>
void read(int enuum[], float ein[], int en)
{
    for (int i = 0; i < en; i++)
    {
        printf("please enter employee number %d code\n:", i + 1);
        scanf("%d", &enuum[i]);
        printf("please enter employee number %d income\n:", i + 1);
        scanf("%f", &ein[i]);
    }
}
void calc(float ein[], float tax[], int en)
{
    for (int i = 0; i < en; i++)
    {
        if (ein[i] < 400000)
            tax[i] = 0;
        if (ein[i] > 400001 && ein[i] < 500000)
            tax[i] = ein[i] * 0.1;
        if (ein[i] > 500001 && ein[i] < 700000)
            tax[i] = ein[i] * 0.15;
        if (ein[i] > 700001)
            tax[i] = ein[i] * 0.17;
    }
}
void comp(float ein[], float tax[], float pure[], int en, int *maxnum)
{
    for (int i = 0; i < en; i++)
        pure[i] = ein[i] - tax[i];
    *maxnum = 0;
    for (int i = 0; i < en; i++)
    {
        if (pure[i] > pure[*maxnum])
        {
            *maxnum = i;
        }
        else
            continue;
    }
}
int main()
{
    int en, maxnum;
    printf("enter the number of the employee\n:");
    scanf("%d", &en);
    float tax[en], pure[en], eincome[en];
    int enumber[en];
```

```

    read(enumber, eincome, en);
    calc(eincome, tax, en);
    comp(eincome, tax, pure, en, &maxnum);
    for (int i = 0; i < en; i++)
    {
        printf("employee with code %d has income of %f\n", enumber[i],
pure[i]);
    }
    printf("and employee with code %d has the highest pure income of %f\n",
enumber[maxnum], pure[maxnum]);
}

```

out:

```

please enter employee number 1 code
:1
please enter employee number 1 income
:120000
please enter employee number 2 code
:2
please enter employee number 2 income
:550000
please enter employee number 3 code
:3
please enter employee number 3 income
:490000
employee with code 1 has income of 120000.000000
employee with code 2 has income of 467500.000000
employee with code 3 has income of 441000.000000
and employee with code 2 has the highest pure income of 467500.000000

```

8.

```

#include <stdio.h>
int main()
{
    int x =5;
    while(--x>0)
        printf("%3d",x);
}

```

out:

```

4  3  2  1↵

```

9.

```
#include <stdio.h>
int main()
{
    for(int i=1;i<=10;i++)
    {
        if(i<5 && i!=2)
            printf("%c",x);
    }
}
```

10.

```
#include <stdio.h>
int main()
{
    int n, i, j;
    float r = 0;
    float b;
    printf("how many steps you wanna continue?\n:");
    scanf("%d", &n);
    for (i = 1; i <= n; i++)
    {
        b = i;
        if (b == 0)
            b = 1;
        else
        {
            for (j = b - 1; j > 0; j--)
                b = b * j;
        }
        r = r + 1 / b;
    }
    printf("%f", r);

    return 0;
}
```

out:

```
how many steps you wanna continue?
:4
1.708333↵

---
```

```
how many steps you wanna continue?  
:2  
1.500000↵
```

11.

didn't get it;

12.

```
#include <stdio.h>  
int main()  
{  
    char day;  
    printf("please enter the number of the day\n:");  
    scanf(" %c", &day);  
    switch (day)  
    {  
        case '1':  
            printf("\nsaturday");  
            break;  
        case '2':  
            printf("\nsunday");  
            break;  
        case '3':  
            printf("\nmonday");  
            break;  
        case '4':  
            printf("\ntuesday");  
            break;  
        case '5':  
            printf("\nwednesday");  
            break;  
        case '6':  
            printf("\nthursday");  
            break;  
        case '7':  
            printf("\nfriday");  
            break;  
    }  
    return 0;  
}
```

out:

```
please enter the number of the day  
:3
```

monday↵

13.

```
#include <stdio.h>
int main()
{
    int d, m, y, h, hm, bd, bm, by;
    int rd, rm, ry;
    printf("please enter the day, month, year of your birthday\n:");
    scanf("%d%d%d", &bd, &bm, &by);
    printf("please enter the current minute, hour, day, month, year in
order\n:");
    scanf("%d%d%d%d%d", &hm, &h, &d, &m, &y);
    rd = bd - d;
    if (rd < 0)
        rd *= -1;
    rm = bm - m;
    if (rm < 0)
        rm *= -1;
    ry = y - by;
    printf("you are %d years and %d months and %d days and %d hours and %d
minutes and 60 seconds old", ry, rm, rd, h, hm);
    return 0;
}
```

out:

```
please enter the day, month, year of your birthday
:12
3
1383
please enter the current minute, hour, day, month, year in order
:58
18
6
3
1402
you are 19 years and 0 months and 6 days and 18 hours and 58 minutes and 60
seconds old↵
```

14.

```

#include <stdio.h>
int main()
{
    int a, b, c;
    float r1, r2;
    float delta;
    double r;
    int i;
    printf("ax^2+bx+c:(a,b,c)\n:");
    scanf("%d%d%d", &a, &b, &c);
    delta = b * b - 4 * a * c;
    if (delta < 0)
        printf("there are no answers for it");
    if (delta > 0)
    {
        r = delta / 2;
        for (i = 0; i < 10; i++)
        {
            r = (r + delta / r) / 2;
        }

        r1 = (-1 * b + r) / (2 * a);
        r2 = (-1 * b - r) / (2 * a);
    }
    if (delta == 0)
    {
        r1 = (-1 * b + r) / (2 * a);
        r2 = 0;
    }
    printf("\nf1=%f\nf2=%f", r1, r2);
    return 0;
}

```

out:

```

ax^2+bx+c:(a,b,c)
:1
-2
1

f1=1.000000
f2=0.000000

---

ax^2+bx+c:(a,b,c)
:1
0
-1

f1=1.000000

```

```
f2=-1.000000↵

---

ax^2+bx+c:(a,b,c)
:1
2
-15

f1=3.000000
f2=-5.000000↵
```

15.

```
#include <stdio.h>
int main()
{
    int i, j;
    const char ch = '$';
    for (i = 1; i <= 4; i++)
    {
        for (j = 1; j <= 6; j++)
            printf("%c", ch);
        printf("\n");
    }
}
```

out:

```
$$$$$$
$$$$$$
$$$$$$
$$$$$$
```

16.

```
#include <stdio.h>
int main()
{
    float f1, f2, t, d, m;
    printf("please enter two floats\n:");
    scanf("%f%f", &f1, &f2);
    if (f1 != 0 && f2 != 0)
    {
```



```

        m = f1 - f2;
        printf("f1-f2= %f\n", m);
        d = f1 / f2;
        printf("f1/f2= %f\n", d);
        t = f1 * f2;
        printf("f1*f2= %f\n", t);
        main();
    }
    else
        return 0;
}

```

out:

```

please enter two floats
:12.87
13.89
f1-f2= -1.020000
f1/f2= 0.926566
f1*f2= 178.764297
please enter two floats
:0
0

```

17.

```

#include <stdio.h>
int main()
{
    char n;
    scanf("%c", &n);
    if (n != '\n')
    {
        main();
        printf("%c", n);
    }
    return 0;
}

```

out:

```

34.981
189.43↵

---

```

20.19671
17691.02

18.

```
#include <stdio.h>

int main()
{
    double num;
    int intPart, decPart;
    printf("Enter a number: ");
    scanf("%lf", &num);
    intPart = (int)num;
    decPart = (num - intPart) * 1000;
    decPart = (decPart > 0) ? (decPart + 0.5) : (decPart - 0.5);
    printf("Integer part: %d\n", intPart);
    printf("Decimal part: %d\n", decPart);
    return 0;
}
```

out:

```
Enter a number: 12.891
Integer part: 12
Decimal part: 891
```

در صورت وجود مشکل یا سوال به این آی دی در تلگرام پیام بدین

لینک به سایت

گیتهاب