

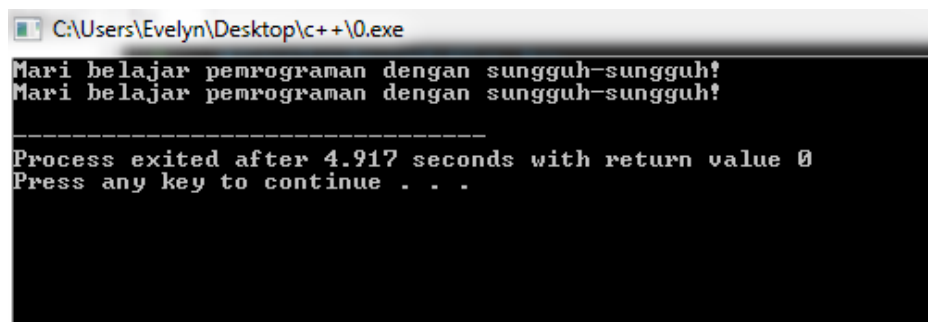
1. Program Pertamaku

<https://training.ia-toki.org/training/curriculums/2/courses/2/chapters/19/problems/83/>

```
#include<stdio.h>

//author : Evelyn Tjitrodjojo

int main(){
    char a[100];
    scanf("%[^\n]",&a); //input kalimat sampai enter
    printf("%s\n",a); //print kalimat yg diinputkan
    return 0;
}
```

A screenshot of a Windows command prompt window titled "C:\Users\Evelyn\Desktop\c++\0.exe". The program has executed and displayed the output "Mari belajar pemrograman dengan sungguh-sungguh!" on two separate lines. Below the output, a separator line is shown, followed by the message "Process exited after 4.917 seconds with return value 0" and "Press any key to continue . . .".

```
C:\Users\Evelyn\Desktop\c++\0.exe
Mari belajar pemrograman dengan sungguh-sungguh!
Mari belajar pemrograman dengan sungguh-sungguh!
-----
Process exited after 4.917 seconds with return value 0
Press any key to continue . . .
```

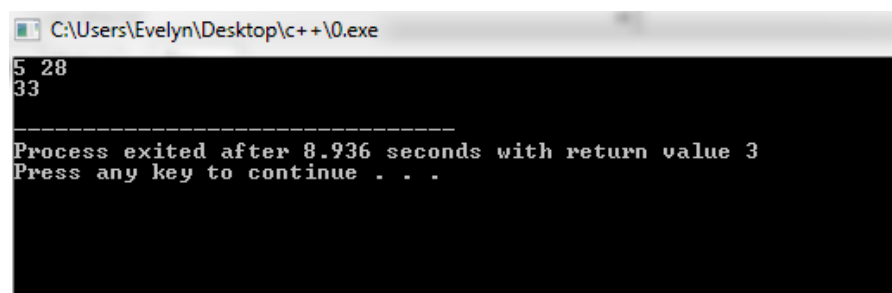
2. A Tambah B

<https://training.ia-toki.org/training/curriculums/2/courses/2/chapters/19/problems/84/>

```
#include<stdio.h>

//author : Evelyn Tjitrodjojo

int main(){
    int a,b;
    scanf("%d %d",&a,&b);
    printf("%d\n",a+b); //penjumlahan dua angka
}
```

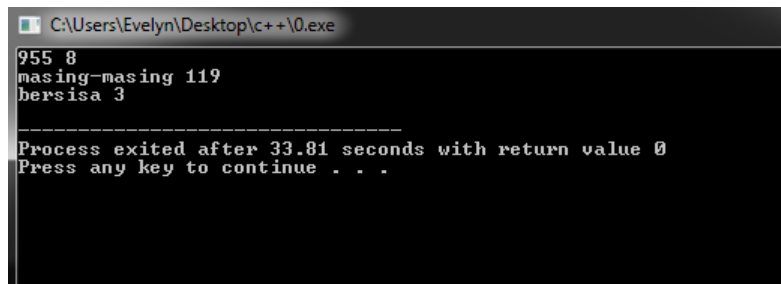
A screenshot of a Windows command prompt window titled "C:\Users\Evelyn\Desktop\c++\0.exe". The program has executed and displayed the output "5 28" on the first line and "33" on the second line. Below the output, a separator line is shown, followed by the message "Process exited after 8.936 seconds with return value 3" and "Press any key to continue . . .".

```
C:\Users\Evelyn\Desktop\c++\0.exe
5 28
33
-----
Process exited after 8.936 seconds with return value 3
Press any key to continue . . .
```

3. Bebek Untuk Teman

<https://training.ia-toki.org/training/curriculum/2/courses/2/chapters/19/problems/85/>

```
#include<stdio.h>
//Author : Evelyn Tjitrodjojo
int main(){
    int n,m;
    scanf("%d %d",&n,&m);
    printf("masing-masing %d\n",n/m); //pembagian dua angka
    printf("bersisa %d\n",n%m); //mod dua angka
    return 0;
}
```

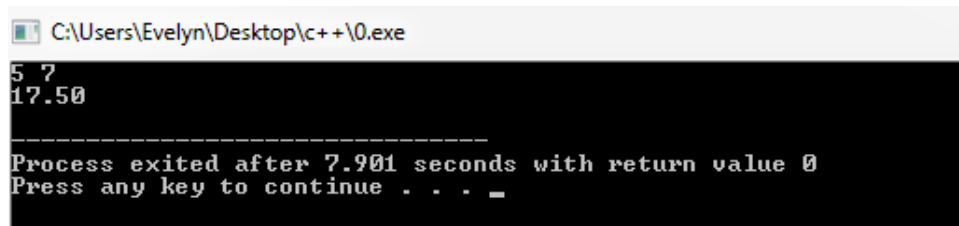


A screenshot of a Windows command prompt window titled "C:\Users\Evelyn\Desktop\c++\0.exe". The window shows the execution of a C++ program. The input is "955 8". The output is "masing-masing 119" and "bersisa 3". Below the output, a separator line is shown, followed by the message "Process exited after 33.81 seconds with return value 0" and "Press any key to continue . . .".

4. Luas Segitiga

<https://training.ia-toki.org/training/curriculum/2/courses/2/chapters/19/problems/86/>

```
#include<stdio.h>
//Author : Evelyn Tjitrodjojo
int main(){
    float a,t;
    scanf("%f %f",&a,&t);
    printf("%.2f\n",a*t/2); //menghitung luas dua angka
    return 0;
}
```



A screenshot of a Windows command prompt window titled "C:\Users\Evelyn\Desktop\c++\0.exe". The window shows the execution of a C++ program. The input is "5 7". The output is "17.50". Below the output, a separator line is shown, followed by the message "Process exited after 7.901 seconds with return value 0" and "Press any key to continue . . .".

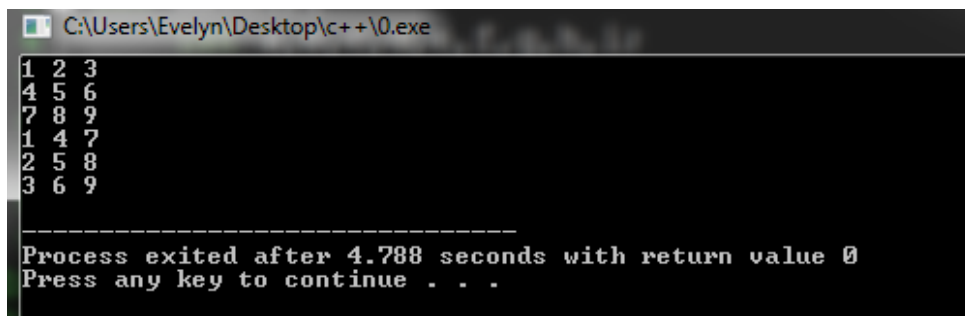
5. Transpos Matriks

<https://training.ia-toki.org/training/curriculum/2/courses/2/chapters/19/problems/87/>

```
#include<stdio.h>

//Author : Evelyn Tjitrodjojo

int main(){
    int a,b,c,d,e,f,g,h,i;
    scanf("%d %d %d\n",&a,&b,&c); //cara transpos matriks
    scanf("%d %d %d\n",&d,&e,&f);
    scanf("%d %d %d",&g,&h,&i);
    printf("%d %d %d\n",a,d,g);
    printf("%d %d %d\n",b,e,h);
    printf("%d %d %d\n",c,f,i);
    return 0;
}
```

A screenshot of a Windows command prompt window. The title bar shows the file path "C:\Users\Evelyn\Desktop\c++\0.exe". The window displays the output of a C++ program. It shows three rows of input numbers: "1 2 3", "4 5 6", and "7 8 9". Below these, it shows the transposed output: "1 4 7", "2 5 8", and "3 6 9". At the bottom, a message states "Process exited after 4.788 seconds with return value 0" and "Press any key to continue . . .".

```
C:\Users\Evelyn\Desktop\c++\0.exe
1 2 3
4 5 6
7 8 9
1 4 7
2 5 8
3 6 9
-----
Process exited after 4.788 seconds with return value 0
Press any key to continue . . .
```

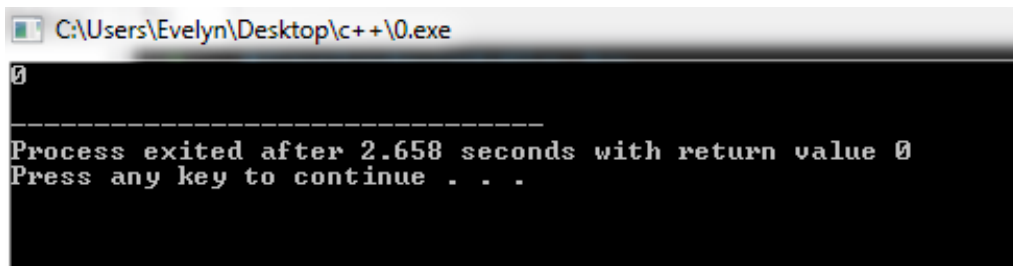
6. If Then

<https://training.ia-toki.org/training/curriculum/2/courses/2/chapters/21/problems/88/>

```
#include<stdio.h>

//Author : Evelyn Tjitrodjojo

int main(){
    int N;
    scanf("%d",&N);
    if (N>0) printf("%d\n",N); //print kalau angka lbh besar dr 0
    return 0;
}
```



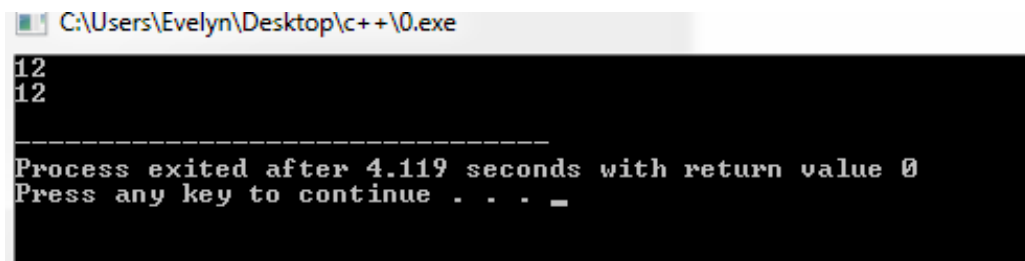
```
C:\Users\Evelyn\Desktop\c++\0.exe

-----
Process exited after 2.658 seconds with return value 0
Press any key to continue . . .
```

7. If Then, Multi Condition

<https://training.ia-toki.org/training/curriculums/2/courses/2/chapters/21/problems/89/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int N;
    scanf("%d",&N);
    if ((N>0)&&(N%2==0)) //jika genap dan lbh besar dr 0, diprint
        printf("%d\n",N);
    return 0;
}
```



```
C:\Users\Evelyn\Desktop\c++\0.exe
12
12

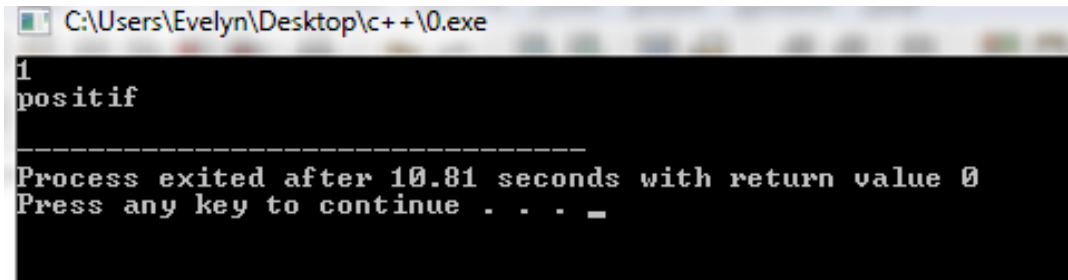
-----
Process exited after 4.119 seconds with return value 0
Press any key to continue . . . _
```

8. If Then Else

<https://training.ia-toki.org/training/curriculums/2/courses/2/chapters/21/problems/90/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int N;
    scanf("%d",&N);
    if (N>0) printf("positif\n"); //jika angka lbh bsr dr 0, maka positif
    else if (N<0) printf("negatif\n"); //jika angka lbh kcl dr 0, negatif
```

```
        else    printf("nol\n"); //jika angka = 0
return 0;
}
```



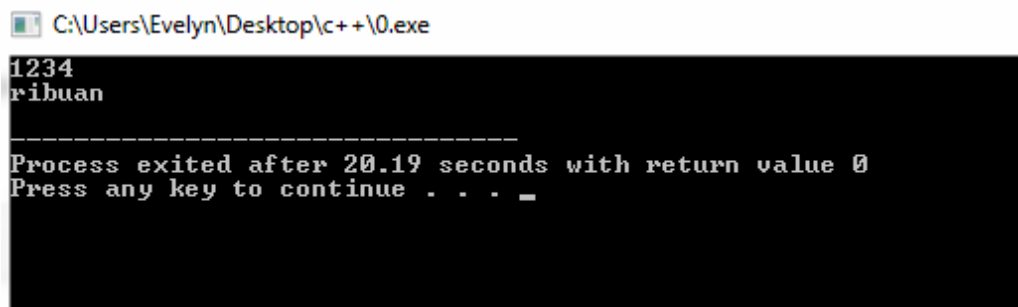
```
1
positif

-----
Process exited after 10.81 seconds with return value 0
Press any key to continue . . . _
```

9. Case

<https://training.ia-toki.org/training/curriculums/2/courses/2/chapters/21/problems/91/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int N;
    scanf("%d",&N);
    if (N<10) printf("satu\n"); //jika angka kurang dr 10
    else if (N<100) printf("puluhan\n"); //jika angka kurang dr 100
    else if (N<1000) printf("ratusan\n"); //jika angka kurang dr 1000
    else if (N<10000) printf("ribuan\n"); //jika angka kurang dr 10000
    else    printf("puluhribuan\n"); //angka puluhribuan
return 0;
}
```




```
1234
ribuan

-----
Process exited after 20.19 seconds with return value 0
Press any key to continue . . . _
```

10. Jarak Manhattan

<https://training.ia-toki.org/training/curriculum/2/courses/2/chapters/21/problems/92/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int x1,x2,y1,y2,hasil;
    scanf("%d %d %d %d",&x1,&y1,&x2,&y2);
    hasil = (x1-x2)+ (y1-y2);
    if (hasil<0) printf("%d\n",hasil*-1); //
    else printf("%d\n",hasil);
return 0;
}
```

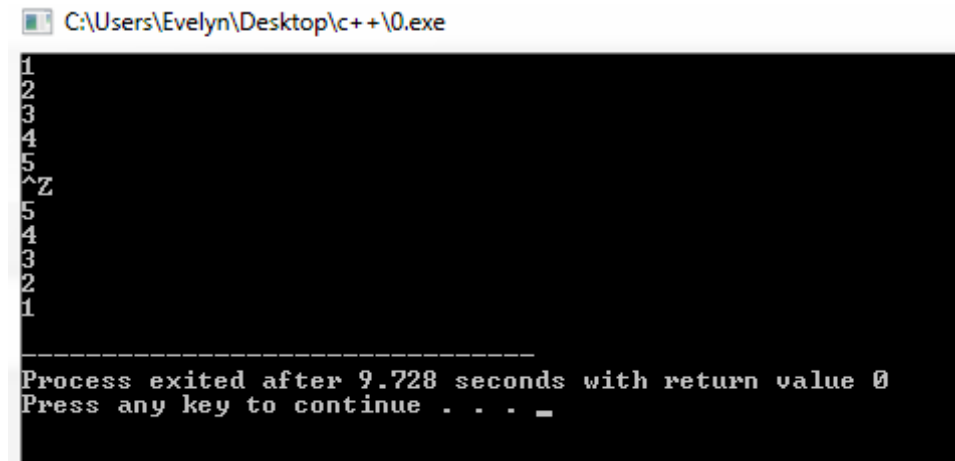
 C:\Users\Evelyn\Desktop\c++\0.exe

```
-1 -1 1 1
4
-----
Process exited after 33.99 seconds with return value 0
Press any key to continue . . .
```

11. Array

<https://training.ia-toki.org/training/curriculum/2/courses/3/chapters/24/problems/105/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int x[25001];
int main(){
    int i=0;
    while (scanf("%d",&x[i])!=EOF){ //diulang sampai EOF
        i++; //scanf array ke i
    }
    while (i--){
        printf("%d\n",x[i]); //print array
    }
return 0;
}
```

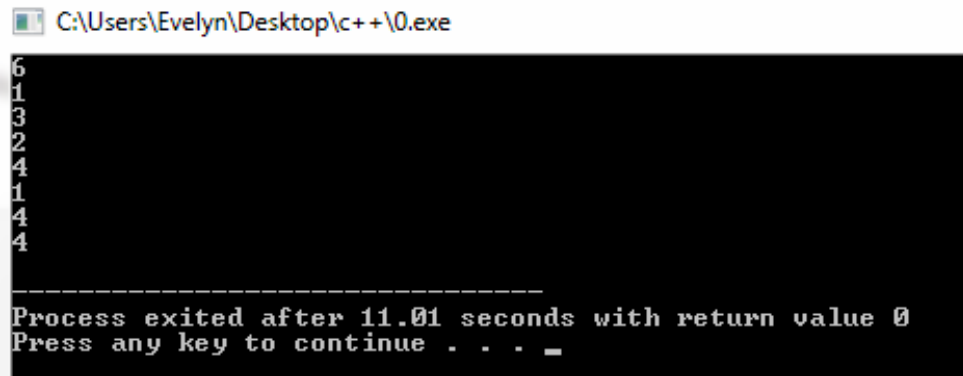


```
C:\Users\Evelyn\Desktop\c++\0.exe
1
2
3
4
5
^Z
5
4
3
2
1
-----
Process exited after 9.728 seconds with return value 0
Press any key to continue . . . _
```

12. Modus Terbesar

<https://training.ia-toki.org/training/curriculums/2/courses/3/chapters/24/problems/105/>

```
#include <stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
int arr[1001];
int a,n=0,m,modus=0,x,y,b;
scanf("%d",&m); //input angka
for(a=0;a<1001;a++)arr[a]=0;
    for(b=0;b<m;b++){
        scanf("%d",&n); //input angka yg yg akan dicari modusnya
        arr[n]++;
    }
int jMax=0,yMax=0;
for(x=0;x<1001;x++){
    if(arr[x]>=jMax){
        jMax=arr[x]; //cara menentukan modus
        modus=x;
    }
}
printf("%d\n",modus);
return 0;
}
```



A screenshot of a C++ console window. The title bar shows the file path "C:\Users\Evelyn\Desktop\c++\0.exe". The console displays a 6x4 matrix of integers: 6, 1, 3, 2, 4, 1 in the first column; 1, 4, 1, 4, 4, 4 in the second column. Below the matrix, a separator line is shown, followed by the text "Process exited after 11.01 seconds with return value 0" and "Press any key to continue . . . _".

13. Matriks

<https://training.ia-toki.org/training/curriculums/2/courses/3/chapters/25/problems/107/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main () {
    int i, j, t,s;
    scanf("%d %d", &t,&s); //input ordo matriks
    int mabok[t][s];
    for (i=0;i<t;i++){
        for(j=0;j<s;j++){
            scanf("%d",&mabok[i][j]); //input matriks
        }
    }
    for (i=0;i<s;i++){
        for(j=0;j<t;j++){
            if(j<t-1){
                printf("%d ",mabok[t-j-1][i]); //print transpose matriks
            }
            else
                printf("%d",mabok[t-j-1][i]);
        }
        printf("\n");
    }
}
```



```
C:\Users\Evelyn\Desktop\c++\0.exe
4 3
34 87 15
66 71 52
47 47 48
45 75 35
45 47 66 34
75 47 71 87
35 48 52 15

-----
Process exited after 14.89 seconds with return value 3
Press any key to continue . . . _
```

14. Perkalian Matriks

<https://training.ia-toki.org/training/curriculums/2/courses/3/chapters/25/problems/108/>

```
#include<stdio.h>
//Author : Evelyn Tjitrodjojo
int main () {
    int i,j,k,n,u,v,m,p,q,r,s,t;
    scanf("%d %d", &m, &n); //input ordo 1
    int x[m][n];
    for (i=0;i<m;i++){
        for(j=0;j<n;j++){
            scanf("%d",&x[i][j]); //input matriks 1
        }
    }

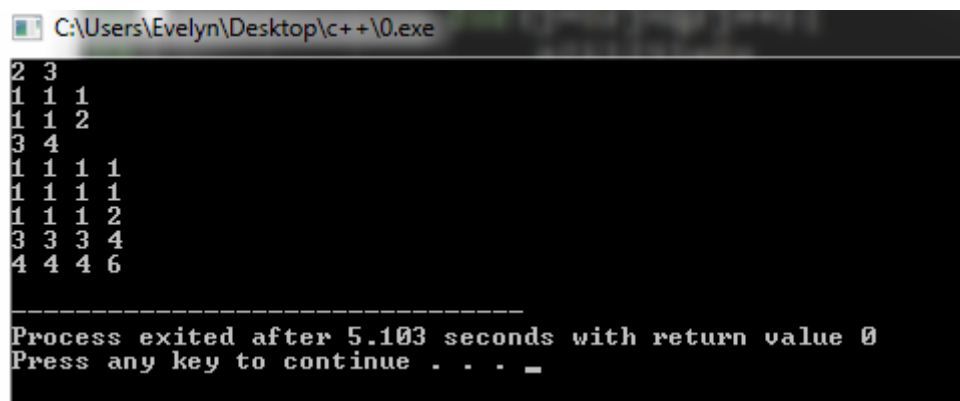
    scanf("%d %d", &p, &q); //input ordo matriks kedua
    int y[p][q];
    for (i=0;i<p;i++){
        for(j=0;j<q;j++){
            scanf("%d",&y[i][j]); //input matriks kedua
        }
    }

    int z[m][q];
    for (i=0;i<m;i++){ //fungsi perkalian matriks
        for(j=0;j<q;j++){
            z[i][j]=0;
            for(k=0;k<p;k++){
                z[i][j]+= x[i][k]*y[k][j];
            }
        }
    }
}
```

```
        }
    }
}

for (i=0;i<m;i++){
    for(j=0;j<q;j++){
        printf("%d",z[i][j]); //print matriks yg dikalikan
        if(j<q-1){
            printf(" "); //print spasi tiap angka
        }
        else printf("\n"); //print enter tiap ganti baris
    }
}

return 0;
}
```



The screenshot shows a Windows command prompt window titled "C:\Users\Evelyn\Desktop\c++\0.exe". The output displays a 4x4 matrix of numbers, which is the result of multiplying two 4x4 matrices. The numbers are: Row 1: 2, 3, 1, 1; Row 2: 1, 1, 1, 2; Row 3: 3, 4, 1, 1; Row 4: 1, 1, 1, 1. Below the matrix, it says "Process exited after 5.103 seconds with return value 0" and "Press any key to continue . . .".

15. Membalik Bilangan

<https://training.ia-toki.org/training/curriculum/2/courses/3/chapters/26/problems/109/>

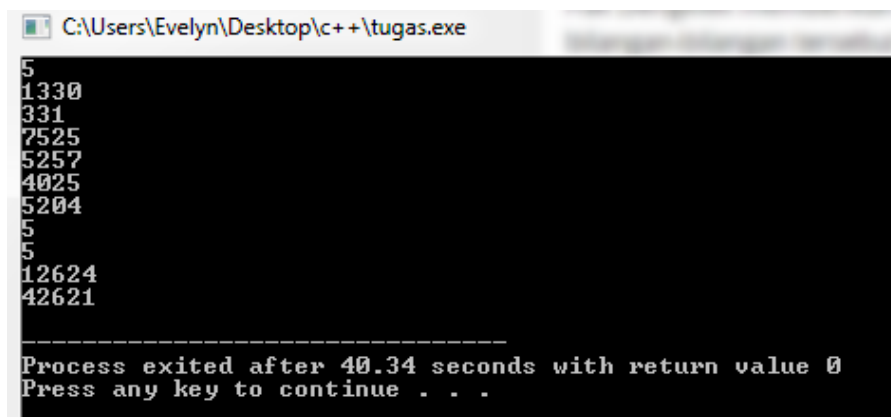
```
#include<stdio.h>

//author : Evelyn Tjitrodjojo

int main(){
    int T,N,a,b;
    scanf("%d",&T); //input testcase
    while (T--){
        scanf("%d",&N); //input angka
        if (N==0) printf("%d\n",N); //jika 0 lgs print
        else {
```

```
        while (N%10==0){
            //untuk menghilangkan 0 diblkg angka sbkm dibalik
            N=N/10; //angka dibagi 10
        }
        while (N>0){ //dibalik semua bilangannya hingga >0
            b=N%10; //di modulo utk mengetahui angka belakangnya
            N=N/10; //dibagi sepuluh
            printf("%d",b); //diprint
        }
        printf("\n");
    }
}

return 0;
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas.exe
5
1330
331
7525
5257
4025
5204
5
5
12624
42621
-----
Process exited after 40.34 seconds with return value 0
Press any key to continue . . .
```

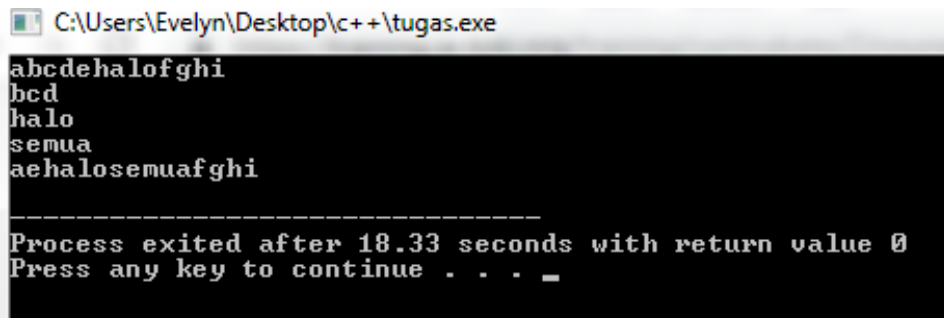
16. Operasi String

<https://training.ia-toki.org/training/curriculums/2/courses/3/chapters/26/problems/110/>

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
int main(){
    char s1[1001],s2[1001],s3[1001],s4[1001];
    int i,j,start,en,tambah,m;
    scanf("%s",s1); //input kata utama
    scanf("%s",s2); //input kata kedua
```

```
scanf("%s",s3); //input kata ketiga
scanf("%s",s4); //input kata ketiga
for(i=0;i<=strlen(s1)-strlen(s2);i++){
//fungsi untuk mengetahui kata pertama yg sama dengan kata kedua
    int sama=1;
    for(j=0;j<strlen(s2);j++){
        if(s1[i+j]!=s2[j]){
            sama=0;
        }
    }
    if(sama){
        start=i;
        en=i+strlen(s2)-1;
        break;
    }
}
for(i=0;i<=strlen(s1)-strlen(s3);i++){
//fungsi untuk menambah kata ketiga ke kata pertama
    int sama=1;
    if(i>=start && i<=en) continue;
    for(j=0;j<strlen(s3);j++){
        while((i+j)>=start&&(i+j)<=en) i++;
        if(s1[i+j]!=s3[j]){
            sama=0;
            break;
        }
    }
    if(sama){
        tambah=i+strlen(s3)-1;
        break;
    }
}
for(i=0;i<strlen(s1);i++){
//fungsi print kata akhir yg diminta
    if(i>=start && i<=en){
        continue;
    }
}
```

```
        }
        printf("%c",s1[i]);
        if(i==tambah){
            printf("%s",s4);
        }
    }
    printf("\n");
    return 0;
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas.exe
abcdehalofghi
bcd
halo
semua
aehalosemuafghi
-----
Process exited after 18.33 seconds with return value 0
Press any key to continue . . . _
```

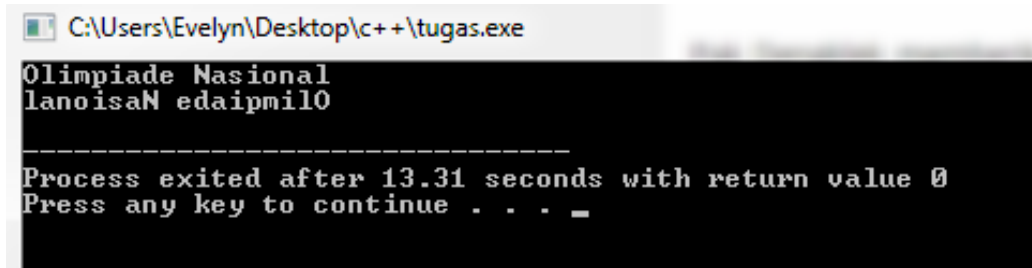
17. Reverse

<https://training.ia-toki.org/training/curriculums/2/courses/3/chapters/26/problems/111/>

```
#include <stdio.h>
#include <string.h>
//author : Evelyn Tjitrodjojo
int main()
{
    int n,t;
    char arr[1100];

    gets(arr); //input kata

    n= strlen(arr);
    for(t=n-1;t>=0;t--)
        printf("%c", arr[t]); //print dr blkg
    printf("\n");
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas.exe
Olimpiade Nasional
lanoisaN edaipmilo
-----
Process exited after 13.31 seconds with return value 0
Press any key to continue . . . _
```

18. Bilangan Agak Prima

<https://training.ia-toki.org/training/curriculums/2/courses/3/chapters/27/problems/112/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int n,i,a,b,c;
    scanf("%d",&n); //input test case
    while(n--){
        scanf("%d",&i); //input angka
        a=0;
        b=2;
        while (b<i){ //while sampai b< inputan
            if(i%b==0){ //jika input di modulo b = 0
                c=1; //penanda bisa di modulo
                a++; //flag
            }
            if(a>2) break; //jika angka bisa di mod lbh dr dua kali dibreak
            b++;
        }
        if(c==1&&a>2) printf("TIDAK\n");
        //jika angka dpt di mod lbh dr dua kali print tidak
        else printf("YA\n");
    }
}
```

```
C:\Users\Evelyn\Desktop\c++\tugas.exe
3
17
YA
51
YA
52
TIDAK

-----
Process exited after 27.71 seconds with return value 0
Press any key to continue . . . _
```

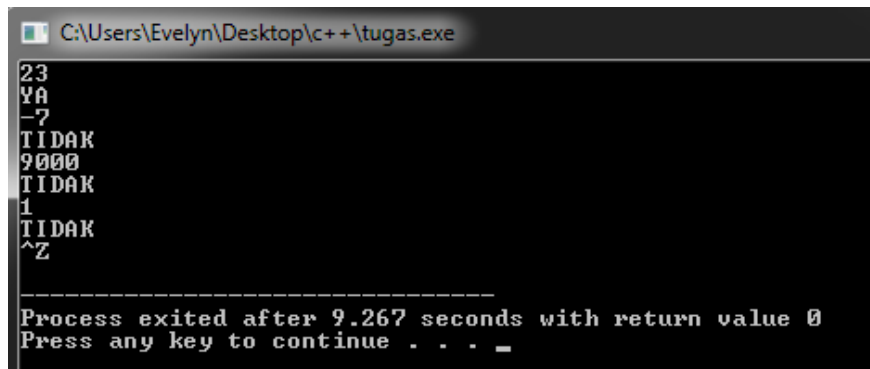
19. Cek Bilangan Prima

<https://training.ia-toki.org/training/curriculums/2/courses/3/chapters/27/problems/113/>

```
#include<stdio.h>
#include<math.h>
//author : Evelyn Tjitrodjojo
int main(){
    int T,N,a,b,c;
    while (scanf("%d",&N)!=EOF){ //input sampai EOF
        c=1;
        if (N>0){ //jika angka lbh dr 0
            for(b=2;b<=sqrt(N);b++){ //fungsi mencari bil prima
                c=N%b;
                if(c==0){
//jika bs dimod dgn angka sampai akar angka tersebut, di break artinya bkn prima
                    break;
                }
            }

            if(c==0||N==1){
                printf("TIDAK\n");
            }
            else if(c!=0||N!=1){
                printf("YA\n");
            }
        }
        else
            printf("TIDAK\n");
    }
}
```

```
    }  
  
    return 0;  
}
```

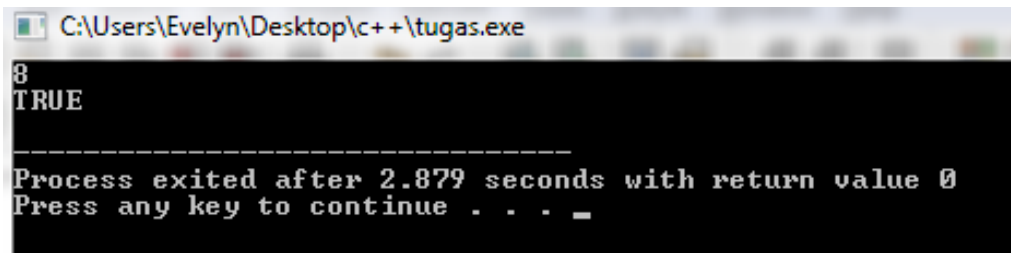


```
C:\Users\Evelyn\Desktop\c++\tugas.exe  
23  
YA  
-7  
TIDAK  
9000  
TIDAK  
1  
TIDAK  
^Z  
  
-----  
Process exited after 9.267 seconds with return value 0  
Press any key to continue . . . _
```

20. Dua Pangkat

<https://training.ia-toki.org/training/curriculums/2/courses/3/chapters/27/problems/114/>

```
#include<stdio.h>  
//author : Evelyn Tjitrodjojo  
  
int main(){  
    int N;  
    while(scanf("%d",&N)!=EOF){ //input sampai EOF  
        while(N%2==0){ //perulangan angka dibagi 2  
            N=N/2;  
        }  
  
        if(N==1){ //jika hasilnya satu berarti dua pangkat  
            printf("TRUE\n");  
        }  
        else  
            printf("FALSE\n");  
    }  
    return 0;  
}
```

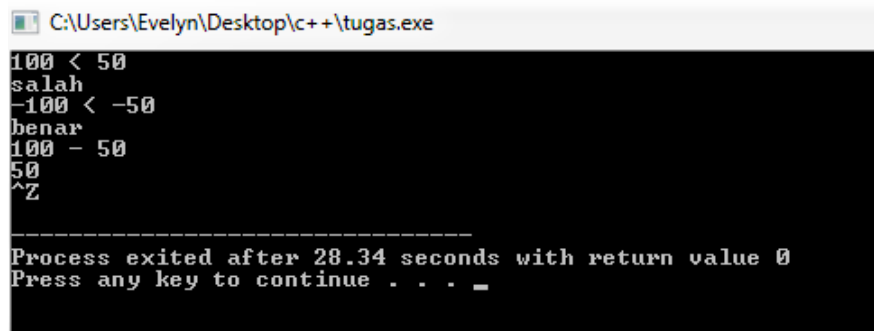



21. Nilai Kalimat Matematika

<https://training.ia-toki.org/training/curriculums/2/courses/3/chapters/27/problems/115/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int a,c;
    char b;
    while(scanf("%d %c %d",&a,&b,&c)!=EOF){ //input hingga EOF
        if(b=='-') printf("%d\n",a-c); //operasi pengurangan
        else if(b=='+') printf("%d\n",a+c); //operasi penambahan
        else if(b=='*') printf("%d\n",a*c); //operasi perkalian
        else if(b=='<') { //cek apakah a<b
            if (a<c){
                printf("benar\n");
            }
            else printf("salah\n");
        }
        else if(b=='>') { //cek apakah b>c
            if (a>c){
                printf("benar\n");
            }
            else printf("salah\n");
        }
        else if(b=='=') { //cek apakah a=c
            if (a==c){
                printf("benar\n");
            }
            else printf("salah\n");
        }
    }
}
```

```
    }  
    return 0;  
}
```

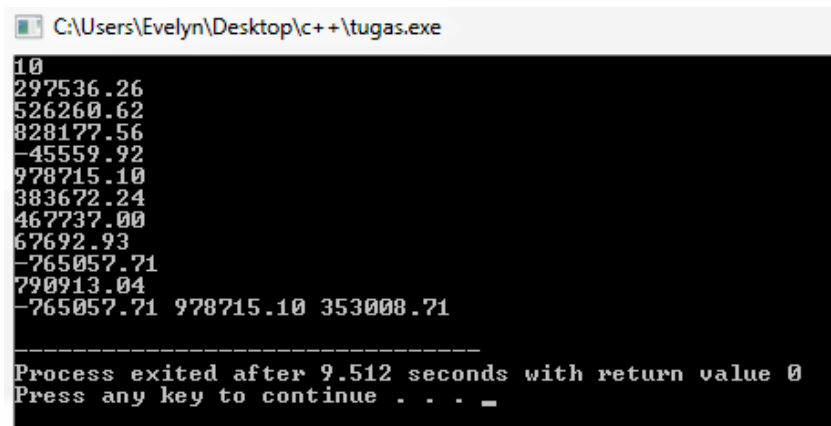


```
C:\Users\Evelyn\Desktop\c++\tugas.exe  
100 < 50  
salah  
-100 < -50  
benar  
100 - 50  
50  
^Z  
  
-----  
Process exited after 28.34 seconds with return value 0  
Press any key to continue . . . _
```

22. Rata-rata

<https://training.ia-toki.org/training/curriculums/2/courses/3/chapters/27/problems/116/>

```
#include<stdio.h>  
//author : Evelyn Tjitrodjojo  
long long n,i;  
double a,a1,min,max,rt=0;  
int main(){  
    scanf("%lld",&n); //input testcase  
    scanf("%lf",&a1); //input angka pertama yg dirata-rata  
    max=a1; //masukkan angka pertama sebagai max dan min  
    min=a1;  
    for(i=1;i<n;i++){  
        scanf("%lf",&a); //input angka berikutnya hingga selesai  
        rt=rt+a; //jumlah semua angka  
        if (max<a) max=a; //cari nilai max  
        if (min>a) min=a; //cari nilai min  
    }  
    rt=rt+a1; //jumlah dgn angka pertama  
    rt=rt/n; //jum dibagi dgn banyak angka sebagai rata"  
    printf("%.2lf %.2lf %.2lf\n",min,max,rt); //print min,max,rata"  
    return 0;  
}
```

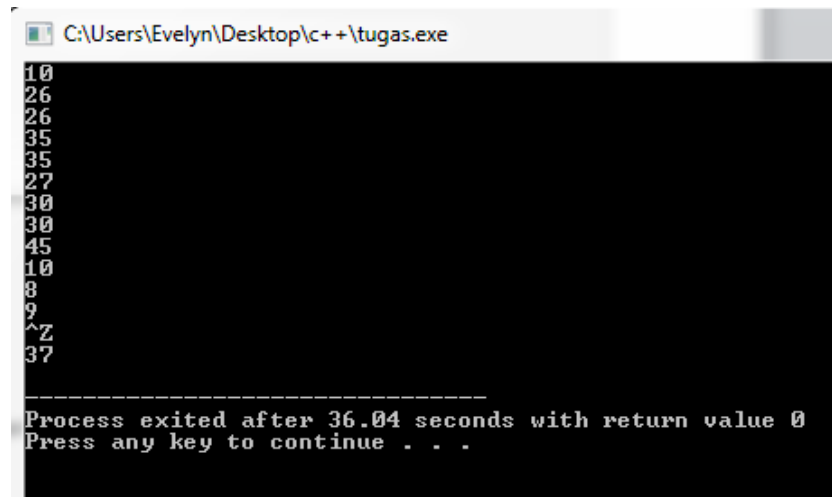


```
C:\Users\Evelyn\Desktop\c++\tugas.exe
10
297536.26
526260.62
828177.56
-45559.92
978715.10
383672.24
467737.00
67692.93
-765057.71
790913.04
-765057.71 978715.10 353008.71
-----
Process exited after 9.512 seconds with return value 0
Press any key to continue . . . _
```

23. Bukit dan Lembah

<https://training.ia-toki.org/training/curriculums/2/courses/4/chapters/28/problems/117/>

```
#include <stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    long long arr[600001];
    long long a,n=0,m,modus=0,x,y,b;
    long long i=0;
        while (scanf("%lld",&arr[i])!=EOF){ //input sampai EOF
            i++;
        }
    long long max=0,min=arr[0];
    for(x=i-1;x>=0;x--){
        if(arr[x]>max) max=arr[x]; //cari nilai max dari semua angka
    }
    for(y=i-1;y>=0;y--){
        if(arr[y]<min) //cari nilai min
            min=arr[y];
    }
    printf("%lld\n",max-min); //print hasil pengurangan nilai max dan min
    return 0;
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas.exe
10
26
26
35
35
27
30
30
45
10
8
9
^Z
37

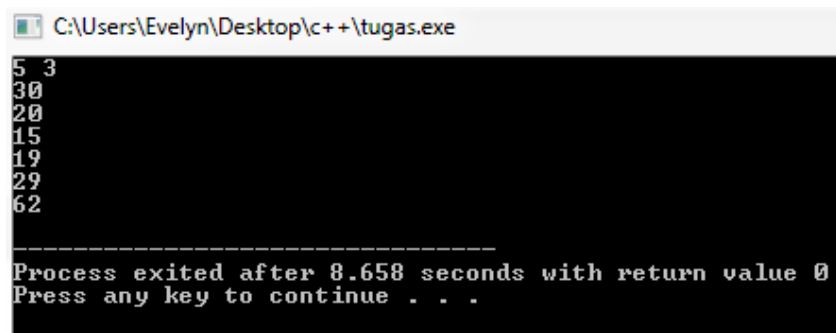
-----
Process exited after 36.04 seconds with return value 0
Press any key to continue . . .
```

24. Tinggi Kandang Susun

<https://training.ia-toki.org/training/curriculum/2/courses/4/chapters/28/problems/118/>

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
int main (){
    long long total=0;
    long long arr;
    long long x,y,a,max,jmlh,lantai;
    scanf("%lld %lld", &x, &y); //input jum tinggi dan jum kucing
    lantai=0;
    jmlh=0;
    while(x>y){ //diulang selama jum tinggi lbh besar dr jum kucing
        max=0;
        for(a=0;a<y;a++) {
            scanf("%lld", &arr); //input tinggi
            if(arr>max) max=arr; //cari tinggi max
        }
        lantai++; //tambah lantai
        x=x-y; //kurangi jum tinggi dgn jum kucing
        jmlh=jmlh+max;
    }
    max=0;
    for(a=0;a<x;a++){
```

```
        scanf("%lld", &arr); //input jum lantai
        if(arr>max) max=arr; //cari max
    }
    jmlh=jmlh+max+lantai+2; //total tinggi
    printf("%lld\n", jmlh);
}
```



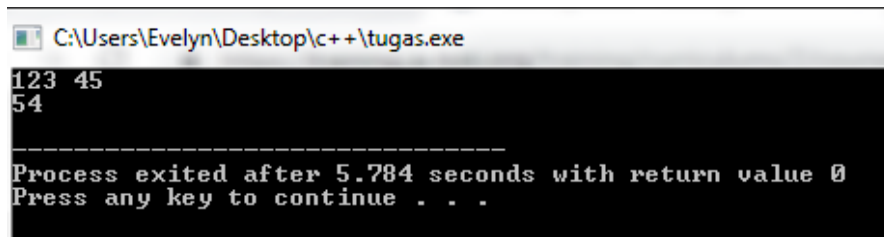
```
C:\Users\Evelyn\Desktop\c++\tugas.exe
5 3
30
20
15
19
29
62
-----
Process exited after 8.658 seconds with return value 0
Press any key to continue . . .
```

25. Perkalian Pak Dengklek

<https://training.ia-toki.org/training/curriculums/2/courses/4/chapters/28/problems/119/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int a,b,e=0,c,d,g;
    int i,j;
    scanf("%d %d",&a,&b); //input dua angka
    g=b;
    while(a>=1){
        c=a%10; //di mod utk angka terbelakang
        a=a/10; //lalu dibagi 10
        b=g;
        while(b>=1){
            d=b%10; //dimod utk mengetahui angka terbelakang
            b=b/10; //dibagi 10
            e=e+(c*d); //dikalikan dgn angka blk pertama
        }
    }
    printf("%d\n",e); //print jumlah
    return 0;
```

```
}
```



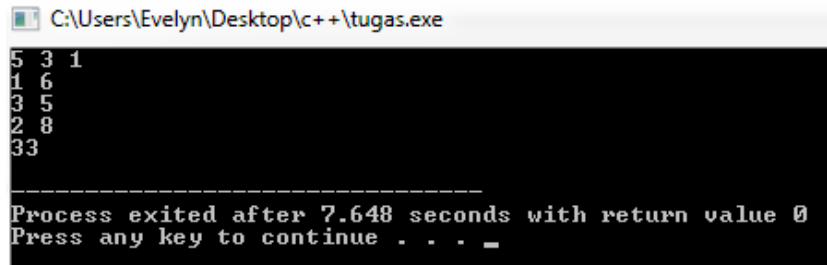
```
C:\Users\Evelyn\Desktop\c++\tugas.exe
123 45
54
-----
Process exited after 5.784 seconds with return value 0
Press any key to continue . . .
```

26. Parkir Truk

<https://training.ia-toki.org/training/curriculum/2/courses/4/chapters/28/problems/120/>

```
#include <stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
int main(){
int arr[100];
int a,n=0,m,jum=0,x,y,b,la,li,lu;
memset(arr,0,sizeof(arr)); //semua isi nilai array di 0 kan
scanf("%d %d %d",&la,&li,&lu); //harga parkir
int jMax=0;
for(x=0;x<3;x++){
    scanf("%d %d",&a,&b); //waktu truk parkit
    if(b>=jMax){ //cari yang maks
        jMax=b;
    }
    for(y=a;y<=b-1;y++){ //penanda truk parkir
        arr[y]++;
    }
}
for(x=1;x<=jMax-1;x++){
    if(arr[x]==1) jum=jum+la;
    //jika satu truk saja yg parkir, ditambah harga pertama
    if(arr[x]==2) jum=jum+2*li;
    //jika dua truk yg parkir, ditambah dgn dua kali harga kedua
    if(arr[x]==3) jum=jum+3*lu;
    //jika tiga truk yg parkir, ditambah dgn dua kali harga ketiga
}
```

```
printf("%d\n",jum);  
return 0;  
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas.exe  
5 3 1  
1 6  
3 5  
2 8  
33  
-----  
Process exited after 7.648 seconds with return value 0  
Press any key to continue . . . _
```

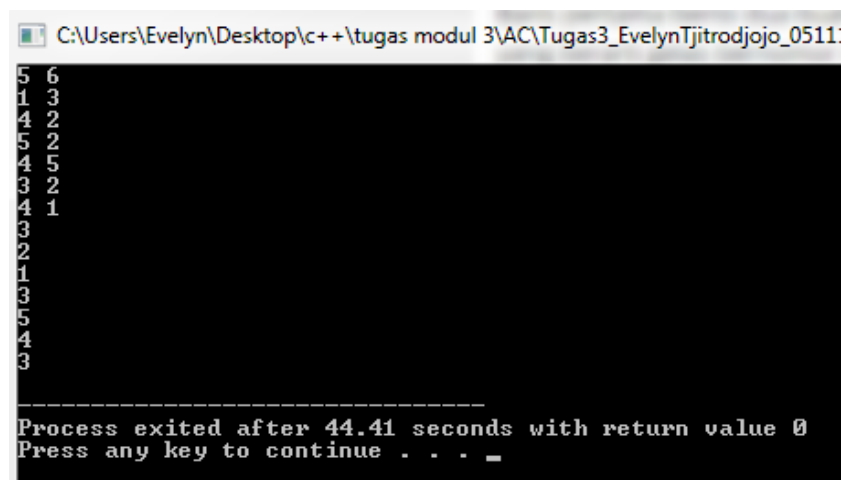
27. Bola dan Gelas

<https://training.ia-toki.org/training/curriculum/2/courses/4/chapters/28/problems/121/>

```
#include<stdio.h>  
//author : Evelyn Tjitrodjojo  
void tukar(long long x,long long y){ //fungsi untuk swap  
    long long temp;  
    temp=x;  
    x=y;  
    y=temp;  
}  
void isiarray(long long n,long long gelas[]){ //fungsi utk isi array gelas  
    long long i;  
    for(i=1;i<=n;i++){  
        gelas[i]=i;  
    }  
}  
int main(){  
    long long gelas[100000];  
    long long bny,tkr,a,b,c,d,e;  
    long long temp;  
    scanf("%d %d",&bny,&tkr); //input posisi gelas  
    isiarray(bny,gelas);  
    for(a=0;a<tkr;a++){  
        scanf("%d %d",&b,&c); //input letak gelas  
        temp=gelas[b]; //swap
```

```
        gelas[b]=gelas[c];
        gelas[c]=temp;
    }
    scanf("%d",&d);
    while(d--){ //print letak gelas
        scanf("%d",&e);
        printf("%d\n",gelas[e]);
    }

    return 0;
}
```



The screenshot shows a Windows command prompt window with the title "C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_0511:". The program has executed and produced the following output:

```
5 6
1 3
4 2
5 2
4 5
3 2
4 1
3
2
1
3
5
4
3

-----
Process exited after 44.41 seconds with return value 0
Press any key to continue . . . _
```

28. Median

<https://training.ia-toki.org/training/curriculum/2/courses/4/chapters/29/problems/122/>

```
#include <stdio.h>

//author : Evelyn Tjitrodjojo

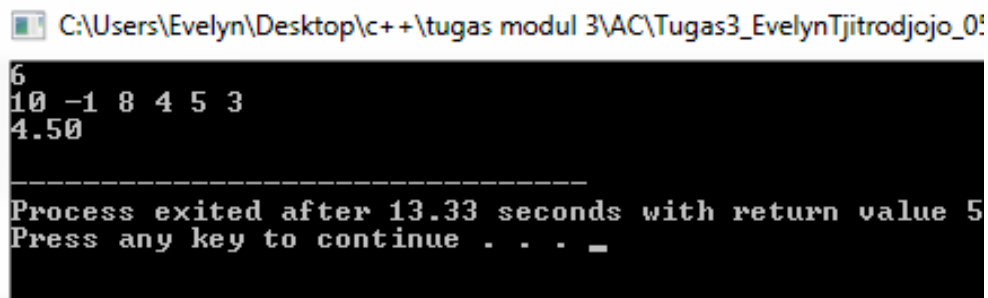
void Sort(float Data[],int L, int R){ //fungsi sort
    int i=L, j=R;
    float temp, x=Data[(L+R)/2];
    while (i <= j){
        while(Data[i] < x) i++;
        while(Data[j] > x) j--;
        if(i <= j){
            temp=Data[i];
            Data[i]=Data[j];
            Data[j]=temp;
        }
    }
}
```



```
        i++;
        j--;
    }

    }
    if(L < j) Sort(Data,L, j);
    if(i < R) Sort(Data,i, R);
}

int main(){
    int i, count;
    float median,number[2000000];
    scanf("%d", &count); //input testcase
    for (i = 0; i < count; ++i)
        scanf("%f", &number[i]); //input angka
    Sort(number, 0,count-1); //disort
    if(count%2==0)
        //jika genap, angka ditengah dgn angka berikutnya ditmbh bagi dua
        median=(number[count/2]+number[count/2-1])/2;
    else median=number[count/2]; //jika ganjil, angka yg ditengah = median
    printf("%.2f\n", median);
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_0!
6
10 -1 8 4 5 3
4.50
-----
Process exited after 13.33 seconds with return value 5
Press any key to continue . . . _
```

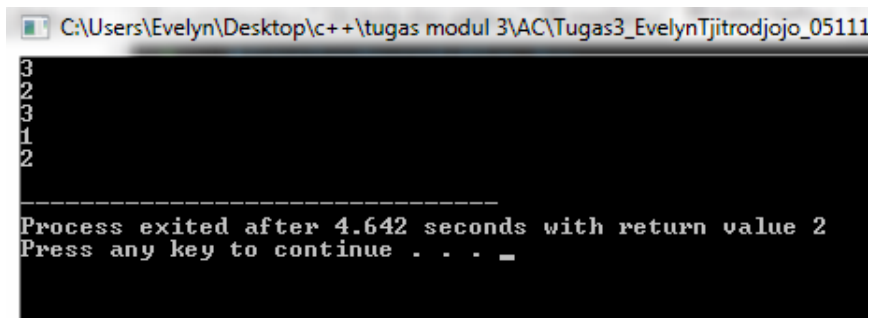
29. Tukar karTu

<https://training.ia-toki.org/training/curriculums/2/courses/4/chapters/29/problems/123/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
long long n,c,i,j;
void bubblesort(int data[],int n){ //fungsi bubble sort
    int temp,i,j;
```

```
        for(i=0;i<n;i++){
            for(j=0;j<n-1;j++){
                if(data[j]>data[j+1]){
                    temp=data[j];
                    data[j]=data[j+1];
                    data[j+1]=temp;
                    c++; //flag jumlah penukaran
                }
            }
        }
    }
}

int main(){
    scanf("%d",&n); //input test case
    int data[n];
    for(i=0;i<n;i++){
        scanf("%d",&data[i]); //input data angka
    }
    bubblesort(data,n); //disort
    printf("%d\n",c); //hasil penukaran terkecil dari data
}
```



The screenshot shows a Windows command prompt window with the title "C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_05111". The program has been executed, and the output is displayed as follows:

```
3
2
3
1
2
-----
Process exited after 4.642 seconds with return value 2
Press any key to continue . . . _
```

30. Pustakawan

<https://training.ia-toki.org/training/curriculums/2/courses/4/chapters/29/problems/124/>

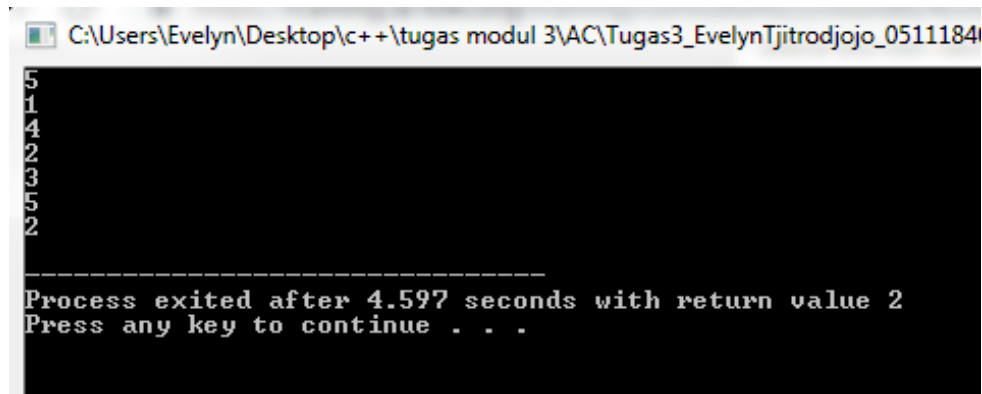
```
#include<stdio.h>

//author : Evelyn Tjitrodjojo

int c;

void swap(long long *xp, long long *yp) { //fungsi swap
```

```
        long long temp = *xp;
        *xp = *yp;
        *yp = temp;
        c++; //flag berapa kali diswap
    }
void selectionsort(long long n,long long arr[]) { //fungsi selection sort
    long long i, j, min_idx;
    // One by one move boundary of unsorted subarray
    for (i = 0; i < n-1; i++) {
        // Find the minimum element in unsorted array
        min_idx = i;
        for (j = i+1; j < n; j++)
            if (arr[j] < arr[min_idx])
                min_idx = j;
        // Swap the found minimum element with the first element
        if(i!=min_idx)swap(&arr[min_idx], &arr[i]);
    }
}
int main(){
    long long n,i;
    c=0;
    scanf("%lld",&n); //input test case
    long long data[1001];
    for(i=0;i<n;i++){
        scanf("%lld",&data[i]); //input data
    }
    selectionsort(n,data); //disort menggunakan fungsi
    printf("%lld\n",c); //jumlah total swap data
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_05111840000099>
5
1
4
2
3
5
2
-----
Process exited after 4.597 seconds with return value 2
Press any key to continue . . .
```

31. Faktorisasi Prima

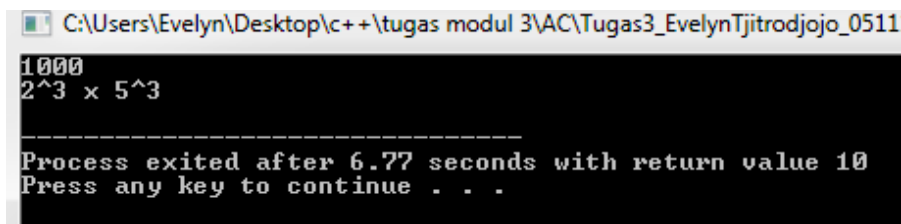
<https://training.ia-toki.org/training/curriculum/2/courses/4/chapters/30/problems/125/>

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
int arr[1000001];
int prime[77778];
int cntprime;

void sieve(){ //fungsi sieve dlm mencari bil prima
    memset(arr,0,sizeof (arr)); //memberi nilai 0 pada isi array
    int i,j;
    cntprime=0;
    arr[1]=1;
    for(i=2;i<1000001;i++){
        if(arr[i]==1) continue;
        prime[cntprime++]=i; //bil prima disimpan dalam array prime
        for(j=i+i;j<1000001;j+=i) arr[j]=1;
        //jika angka tdk prima continue
    }
}

int main(){
    sieve();
    int c,n,i;
    scanf("%d",&n); //input angka
```

```
for(i=0;n>1;i++){
    c=0;
    while(n%prime[i]==0){ //jika mod prima =0
        n/=prime[i]; //dibagi dgn bil tersebut dan di counter
        c++;
    }
    if(c==1) printf("%d",prime[i]);
    //jika 1 langsung print angka prima
    else if(c>1) printf("%d^%d",prime[i],c);
    //jika pangkat, print counter jg
    if(c>0 && n>1) printf(" x "); //print kali
}
printf("\n");
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_0511
1000
2^3 x 5^3
-----
Process exited after 6.77 seconds with return value 10
Press any key to continue . . .
```

32. Prima Ke-K

<https://training.ia-toki.org/training/curriculums/2/courses/4/chapters/30/problems/126/>

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
int arr[1000001];
int prime[77778];
int cntprime;

void sieve(){ //fungsi sieve untuk menyimpan bil prima dgn cara cepat
    memset(arr,0,sizeof (arr)); //mengeset nilai array 0
    int i,j;
    cntprime=1;
    arr[1]=1;
    for(i=2;i<1000001;i++){
```

```
        if(arr[i]==1) continue; //jika tdk prima, continue
        prime[cntprime++]=i; //jika bil prima, simpan di dlm array prime
        for(j=i+i;j<1000001;j+=i) arr[j]=1;
    }
}

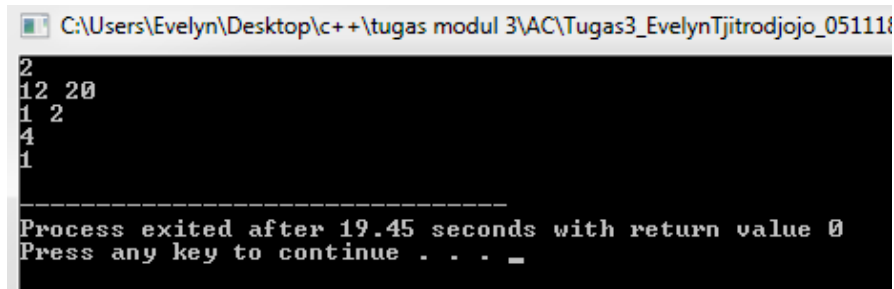
int main(){
    sieve(); //menjalankan fungsi sieve
    int t,a;
    scanf("%d",&t); //input test case
    while(t--){
        scanf("%d",&a); //input angka
        printf("%d\n",prime[a]); //print bil prima ke angka
    }
}
```

33. Faktor Persekutuan Terbesar

<https://training.ia-toki.org/training/curriculums/2/courses/4/chapters/30/problems/127/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    long long t,temp,i,a,b,hasil[10000];
    scanf("%lld",&t); //input test case
    for(i=1;i<=t;i++){
        scanf("%lld %lld",&a,&b); //angka
        while(b>0){
            temp=a%b; //a mod b
            a=b; //swab a dan b
            b=temp;
        }
        hasil[i]=a; //simpan a dalam array
    }
    for(i=1;i<=t;i++){
```

```
        printf("%lld\n",hasil[i]); //print fpb yg disimpan
    }
    return 0;
}
```



The screenshot shows a Windows command prompt window with the title "C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_051118". The program has executed and produced the following output:

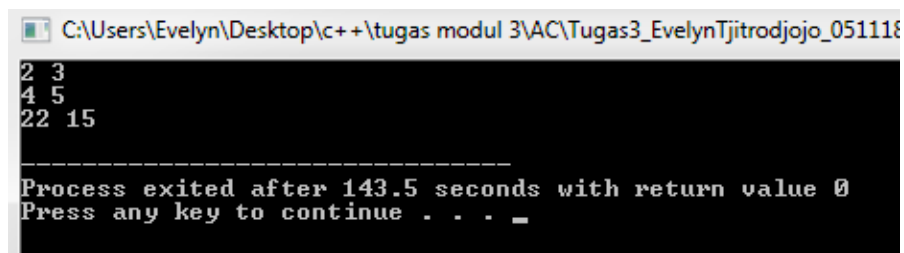
```
2
12 20
1 2
4
1
-----
Process exited after 19.45 seconds with return value 0
Press any key to continue . . . _
```

34. Penjumlahan Pecahan

<https://training.ia-toki.org/training/curriculums/2/courses/4/chapters/30/problems/128/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int FPB(long long x, long long y){ //fungsi fpb
    long long r,fpb;
    while(y>0){
        r=x%y;
        x=y; //swap
        y=r;
    }
    fpb=x;
    return fpb;
}
int main(){
    long long a,b,c,d,e,f,g,temp;
    scanf("%lld %lld",&a,&b); //input pembilang
    scanf("%lld %lld",&c,&d); //input penyebut
    if(b==0){
        e=c;
        f=d;
    }
    else if(d==0){
```

```
        e=a;
        f=b;
    }
    else{
        g=FPB(b,d); //menghitung pecahan
        b=b/g;
        d=d/g;
        a=a*d;
        c=c*b;
        f=b*d*g;
        e=a+c;
    }
    while(FPB(e,f)>1){
        temp=FPB(e,f);
        e=e/temp;
        f=f/temp;
    }
    if(e==f)
        printf("1\n");
    else printf("%lld %lld\n",e,f); //print penjumlahan pecahan
    return 0;
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_051118
2 3
4 5
22 15

-----
Process exited after 143.5 seconds with return value 0
Press any key to continue . . . _
```

35. Faktorial

<https://training.ia-toki.org/training/curriculums/2/courses/4/chapters/30/problems/129/>

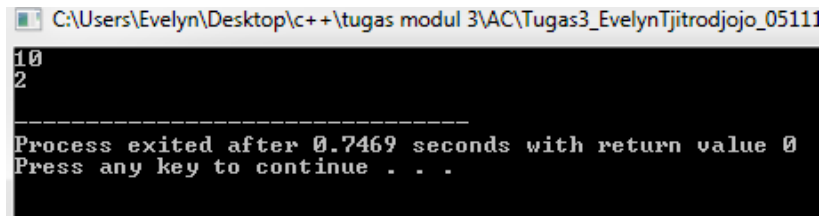
```
#include<stdio.h>

//author : Evelyn Tjitrodjojo

int main(){
    long long a,c=0,i,temp;
```



```
scanf("%lld",&a); //input angka
for(i=5;i<=a;i+=5){
    temp=i;
    while(temp%5==0){ //mod 5
        temp/=5; //dibagi 5
        c++; //diflag
    }
}
printf("%lld\n",c); //print flag sebagai faktorial
return 0;
}
```



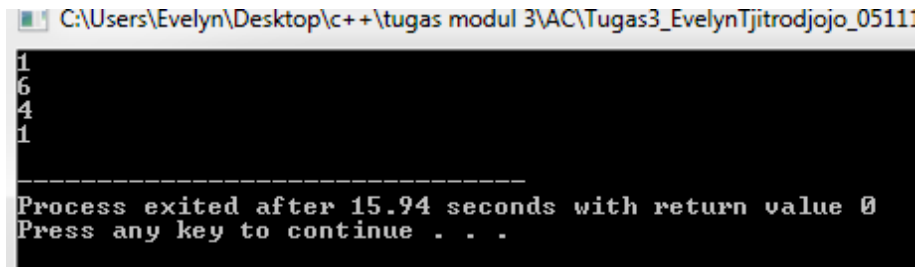
36. Pemberat

<https://training.ia-toki.org/training/curriculums/2/courses/4/chapters/30/problems/130/>

```
#include<stdio.h>
#include<math.h>
//author : Evelyn Tjitrodjojo
long long z[64];
void precom(){ //precom utk menyimpan bil
    long long i;
    for(i=0;i<63;i++){
        z[i]=pow(2,i); //simpan kuadrat 2 ke dalam array
    }
}
int main(){
    long long a,b;
    long long n, c, k;
    scanf("%lld",&a); //input angka 1
    scanf("%lld",&b); //input angka 2
    precom(); //fungsi precom
}
```

```
n=b-a; //hasil pengurangan angka 2 - angka 1
for (c = 61; c >= 0; c--){
    k = n >> c; //menggeser biner / dibagi 2

    if (k & 1) printf("%lld\n",z[c]); //print hasil
}
return 0;
}
```

A screenshot of a Windows command prompt window. The title bar shows the file path: C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_05111840000099. The command prompt shows the output of a program: 1, 6, 4, 1, followed by a horizontal line of dashes. Below the dashes, it says "Process exited after 15.94 seconds with return value 0" and "Press any key to continue . . .".

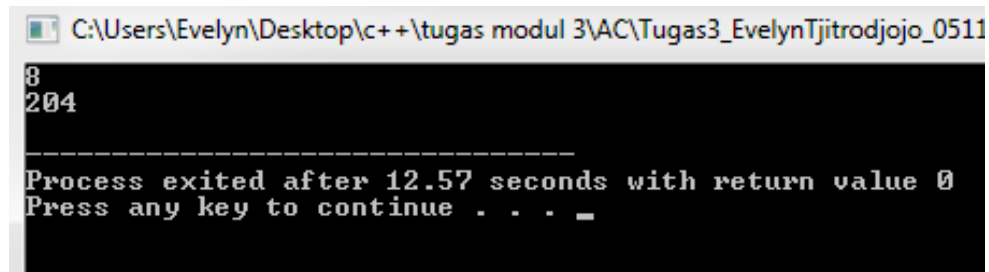
```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_05111840000099>
1
6
4
1
-----
Process exited after 15.94 seconds with return value 0
Press any key to continue . . .
```

37. Sub-Persegi

<https://training.ia-toki.org/training/curriculums/2/courses/4/chapters/30/problems/131/>

```
#include<stdio.h>
#include<math.h>
//author : Evelyn Tjitrodjojo
long long cnt,n;
int square(long long base){
    long long square;
    cnt=1;
    square=0;
    while (cnt<=base){
        square=square+pow(cnt,2); //kuadrat cnt ditambah persegi
        cnt++; //flag
    }
    return square;
}
int main(){
    long long n;
    scanf("%lld",&n); //input angka
    printf("%lld\n",square(n)); //print angka hasil kuadrat
}
```

```
return 0;  
}
```

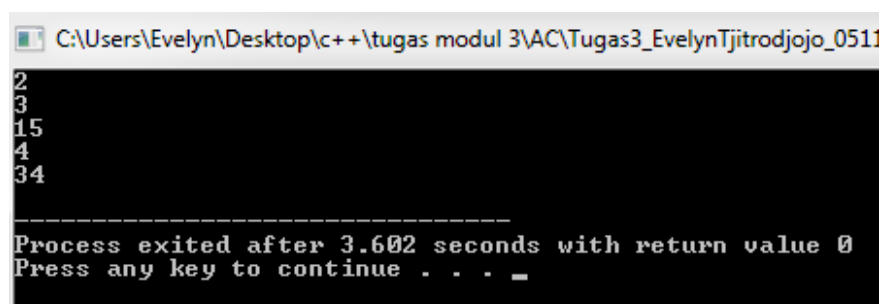


```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_0511  
8  
204  
-----  
Process exited after 12.57 seconds with return value 0  
Press any key to continue . . . _
```

38. Magic Square

<https://training.ia-toki.org/training/curriculums/2/courses/4/chapters/30/problems/132/>

```
#include<stdio.h>  
//author : Evelyn Tjitrodjojo  
int main(){  
    long long a,b,c;  
    scanf("%lld",&a); //input testcase  
    while(a--){  
        scanf("%lld",&b); //input angka  
        printf("%lld\n",b*(b*b+1)/2); //print hasil rumus magic square  
    }  
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_0511  
2  
15  
4  
34  
-----  
Process exited after 3.602 seconds with return value 0  
Press any key to continue . . . _
```

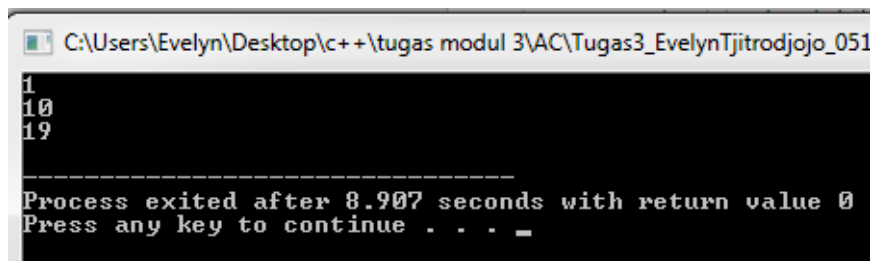
39. Kelipatan 4 atau 7

<https://training.ia-toki.org/training/curriculums/2/courses/4/chapters/30/problems/133/>

```
#include<stdio.h>  
//author : Evelyn Tjitrodjojo  
long long arr[1001001];
```

```
void precomp(){ //simpan hasil precom
    long long i;
    arr[0]=0;
    for(i=1;i<1001001;i++){
        if(i%4==0||i%7==0) arr[i]=arr[i-1]+i;
        //jika bisa di mod 4 atau 7 berarti kelipatan 4 atau 7
        else arr[i]=arr[i-1];
    }
}

int main(){
    long long a,b,c;
    scanf("%lld",&b); //input testcase
    precomp();
    while(b--){
        scanf("%lld",&a); //input angka
        printf("%lld\n",arr[a]); //print hasil dari precomp yg udh disimpan
    }
}
```

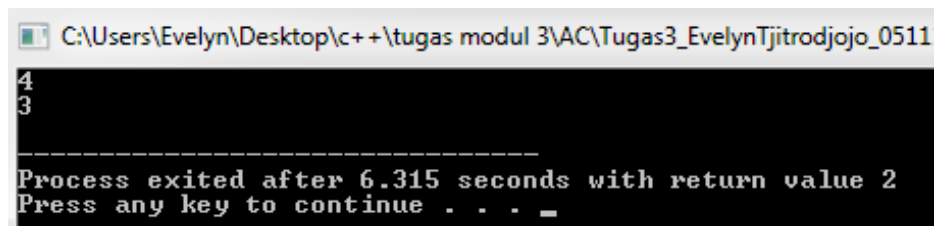


40. Memasang Lantai

<https://training.ia-toki.org/training/curriculum/2/courses/4/chapters/31/problems/134/>

```
#include <stdio.h>
#include <string.h>
//author : Evelyn Tjitrodjojo
long long data[1010];
long long func(long long x){
    if(data[x]!=-1)
        return data[x];
    data[x]=(func(x-1)+func(x-3))%1000000;
}
```

```
        return data[x];
    }
    int main(){
        memset(data, -1, sizeof(data));
        data[0]=data[1]=data[2]=1;
        int n;
        scanf("%d", &n);
        printf("%lld\n", func(n));
    }
```



```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_0511
4
3
-----
Process exited after 6.315 seconds with return value 2
Press any key to continue . . . _
```

41. Pecahan Uang

<https://training.ia-toki.org/training/curriculums/2/courses/4/chapters/31/problems/135/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int k,t,i;
    int c[10]={1,2,5,10,20,50,100,200,500,1000};
    scanf("%d",&k);
    for(i=9;i>=0;i--){
        if(k>=c[i]){
            t=k/c[i];
            k=k-c[i]*t;
            printf("%d %d\n",c[i],t);
        }
    }
    return 0;
}
```

```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_0511
98
50 1
20 2
5 1
2 1
1 1

-----
Process exited after 7.492 seconds with return value 0
Press any key to continue . . .
```

42. Periksa Palindrom

<https://training.ia-toki.org/training/curriculum/2/courses/4/chapters/31/problems/136/>

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
int main(){
    int h=0,j,t,k,c=0;
    char z[100000],tanda;
    while(1){
        scanf("%s%c",&z,&tanda);
        c++;
        t=strlen(z);
        h=0;
        for(j=0,k=t-1;j<=((t-1)/2);j++,k--){
            if(z[j]!=z[k]){
                h++;
            }
        }
        if(h==0&&c==1)printf("%s",z);
        else if(h==0) printf(" %s",z);
        if(tanda=='\n') break;
    }
    printf("\n");
    return 0;
}
```

```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_05111840000099\31
apa yang di alami malam ini oleh anna dan saras tidak pernah ada
apa malam ini anna saras ada

-----
Process exited after 22.5 seconds with return value 0
Press any key to continue . . . _
```

43. SDS

<https://training.ia-toki.org/training/curriculum/2/courses/4/chapters/31/problems/137/>

```
#include<stdio.h>
#include<math.h>
//author : Evelyn Tjitrodjojo
long long n,i;
double simpbaku=0,a,a1,min,max,rt=0,rtk=0;
int main(){
    scanf("%lld",&n);
    scanf("%lf",&a1);
    max=a1;
    min=a1;
    for(i=1;i<n;i++){
        scanf("%lf",&a);
        rt=rt+a;
        rtk=rtk+pow(a,2);
        if (max<a) max=a;
        if (min>a) min=a;
    }
    rtk=rtk+pow(a1,2);
    rt=rt+a1;
    rt=rt/n;
    simpbaku= sqrt((rtk-(pow(rt,2))*n)/(n-1));
    printf("%.2lf %.2lf %.2lf %.2lf\n",min,max,rt,simpbaku);
    return 0;
}
```

```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_051118
10
297536.26
526260.62
828177.56
-45559.92
978715.10
383672.24
467737.00
67692.93
-765057.71
790913.04
-765057.71 978715.10 353008.71 510618.90

-----
Process exited after 4.06 seconds with return value 0
Press any key to continue . . . _
```

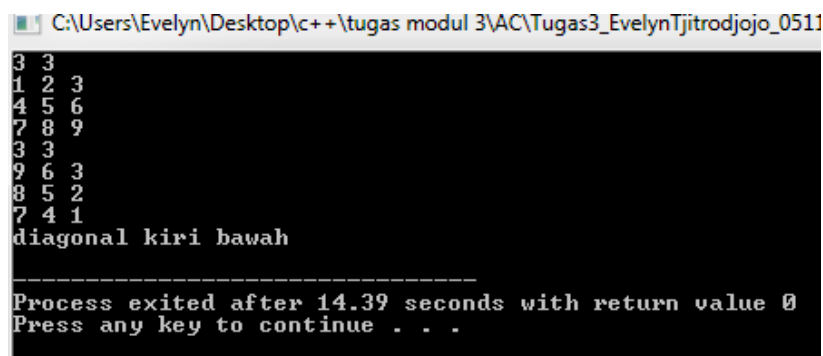
44. Refleksi Matriks

<https://training.ia-toki.org/training/curriculum/2/courses/4/chapters/31/problems/138/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int a,b,c,d,i,j;
    scanf("%d %d",&a,&b);
    int x[a][b];
    for(i=0;i<a;i++){
        for(j=0;j<b;j++){
            scanf("%d",&x[i][j]);
        }
    }
    scanf("%d %d",&c,&d);
    int y[c][d];
    for(i=0;i<c;i++){
        for(j=0;j<d;j++){
            scanf("%d",&y[i][j]);
        }
    }
    int l=0,m=0,n=0,o=0,p=0;
    for(i=0;i<c;i++){
        for(j=0;j<d;j++){
            if(x[i][j]==y[i][j]) l++; //identik
            if(x[i][j]==y[c-i-1][j]) m++; //horisontal
            if(x[i][j]==y[i][c-j-1]) n++; //vertikal
        }
    }
}
```



```
        if(x[i][j]==y[j][i]) o++; //diagonal kanan bawah
        if(x[i][j]==y[c-j-1][c-i-1]) p++; //diagonal kiri bawah
    }
}
if(l==(c*d)) printf("identik\n");
else if(m==(c*d)) printf("horisontal\n");
else if(n==(c*d)) printf("vertikal\n");
else if(o==(c*d)) printf("diagonal kanan bawah\n");
else if(p==(c*d)) printf("diagonal kiri bawah\n");
else printf("tidak identik\n");
}
```



The screenshot shows a Windows command prompt window with the following output:

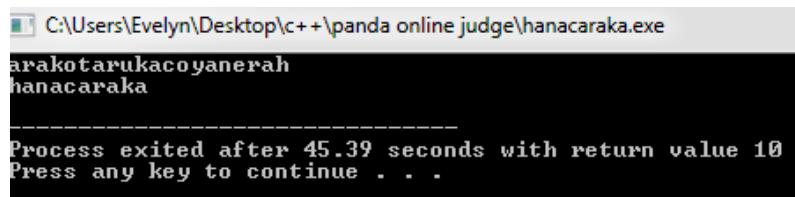
```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\AC\Tugas3_EvelynTjitrodjojo_0511
3 3
1 2 3
4 5 6
7 8 9
3 3
9 6 3
8 5 2
7 4 1
diagonal kiri bawah
-----
Process exited after 14.39 seconds with return value 0
Press any key to continue . . .
```

45. Hanacaraka

<https://pandaoj.com/problem/HANACARAKA>

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
int main(){
    int a,b,c,d,i,j;
    char x[4001];
    scanf("%s",&x); //input string
    for(i=strlen(x)-1;i>=0;i--){ //diulang dari belakang string sampai huruf
        terdepan
        if(x[i]=='a' || x[i]=='i' || x[i]=='u' || x[i]=='e' || x[i]=='o'){ //Jika
            ada huruf vokal
            printf("%c",x[i]); //print huruf vokal
            i-=2; //dilompati dua huruf
        }
    }
}
```

```
    }  
    else  
        printf("%c",x[i]); //selain itu print biasa  
    }  
    printf("\n"); //print enter  
}
```

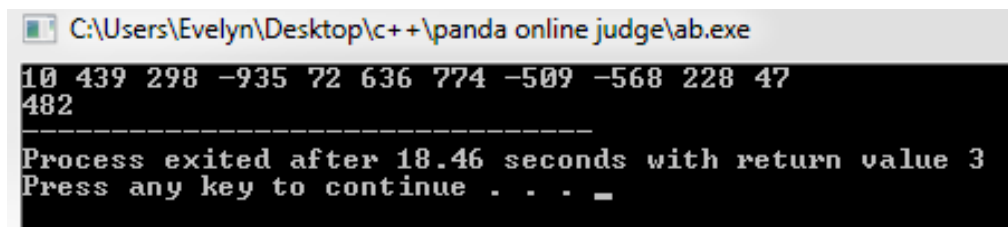


```
C:\Users\Evelyn\Desktop\c++\panda online judge\hanacaraka.exe  
arakotarukacoyanerah  
hanacaraka  
-----  
Process exited after 45.39 seconds with return value 10  
Press any key to continue . . .
```

46. A + B + ...

<https://pandaoj.com/problem/AB>

```
#include<stdio.h>  
//author : Evelyn Tjitrodjojo  
int main(){  
    int i,b=0,a,x[10000];  
    scanf("%d",&a); //input besar array  
    for(i=0;i<a;i++){  
        scanf("%d",&x[i]); //input angka  
        b=b+x[i]; //jumlah semua angka  
    }  
    printf("%d",b); //print angka  
}
```

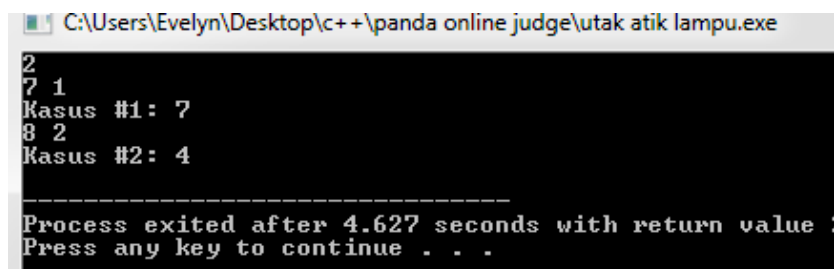


```
C:\Users\Evelyn\Desktop\c++\panda online judge\ab.exe  
10 439 298 -935 72 636 774 -509 -568 228 47  
482  
-----  
Process exited after 18.46 seconds with return value 3  
Press any key to continue . . .
```

47. Utak Atik Lampu

<https://pandaoj.com/problem/BNPCHS2016F>

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
int main(){
    int n,a,b,c,i,j,x[10000],y;
    scanf("%d",&a); //input test case
    for(n=1;n<=a;n++){
        scanf("%d %d",&b,&c); //input angka
        memset(x,0,sizeof(x)); //set array x dengan nilai 0
        y=0;
        for(i=1;i<=c;i++){
            for(j=i;j<=b;j+=i){
                if(x[j]==0){ //jika array x = 0
                    y++; //flag y
                    x[j]=1; //nilai x menjadi 1
                }
                else if(x[j]==1){ //jika nilai array x = 1
                    y--; //flag dikurangi
                    x[j]=0; //nilai x menjadi 0
                }
            }
        }
        printf("Kasus #%d: %d\n",n,y); //print hasil
    }
}
```



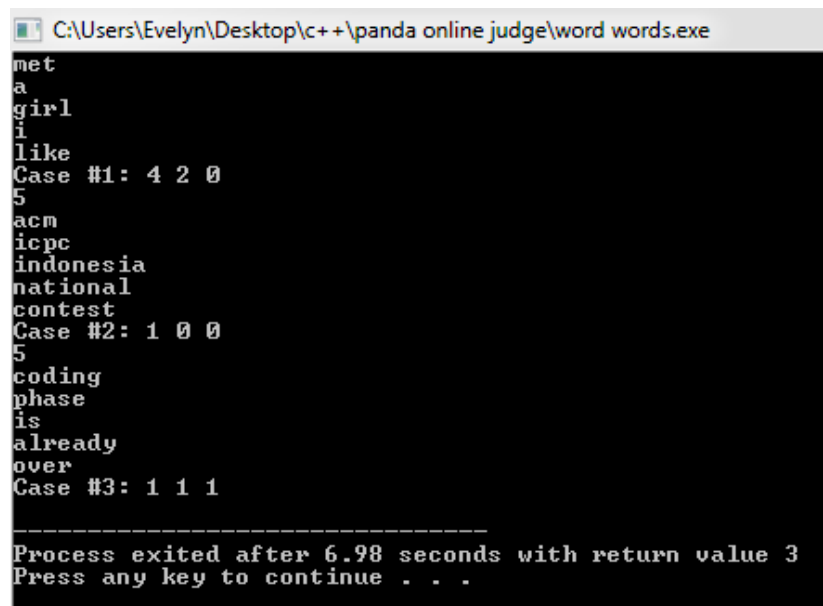
```
C:\Users\Evelyn\Desktop\c++\panda online judge\utak atik lampu.exe
2
7 1
Kasus #1: 7
8 2
Kasus #2: 4
-----
Process exited after 4.627 seconds with return value : 0
Press any key to continue . . .
```

48. Word Words Wordsz

<https://pandaoj.com/problem/INC2013A>

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

```
#include<string.h>
//author : Evelyn Tjitrodjojo
int main(){
    int i,j,k,a,b,c,d;
    int l=0,m=0,n=0;
    char x[1000];
    scanf("%d",&a);
    for(i=1;i<=a;i++){
        l=0; m=0; n=0;
        scanf("%d",&b);
        for(j=0;j<b;j++){
            c=0;
            scanf("%s",&x);
            c=strlen(x);
            if(c==4)l++;
            else if(c==5)m++;
            else if(c==6)n++;
        }
        printf("Case #d: %d %d %d\n",i,l,m,n);
    }
}
```



```
C:\Users\Evelyn\Desktop\c++\panda online judge\word words.exe
met
a
girl
i
like
Case #1: 4 2 0
5
acm
icpc
indonesia
national
contest
Case #2: 1 0 0
5
coding
phase
is
already
over
Case #3: 1 1 1
-----
Process exited after 6.98 seconds with return value 3
Press any key to continue . . .
```

49. Squareception

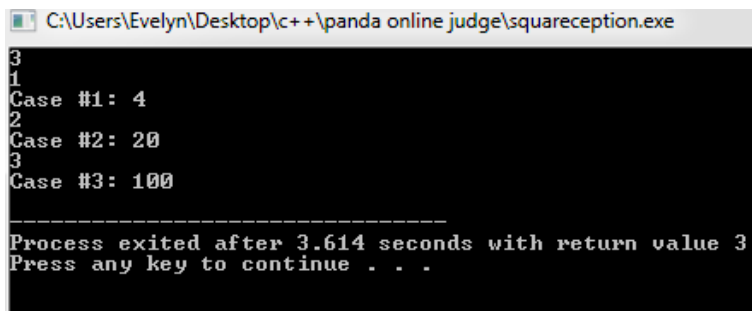
<https://pandaoj.com/problem/JC4B>

```
#include<stdio.h>

//author : Evelyn Tjitrodjojo

int power(long long x, unsigned long long y, long long p){
    long long res = 1;        // Initialize result
    x = x % p; // Update x if it is more than or
                        // equal to p
    while (y > 0){
        // If y is odd, multiply x with result
        if (y%2== 1) //y&1
            res = (res*x) % p;
        // y must be even now
        y = y/2; // y = y>>1
        x = (x*x) % p;
    }
    return res;
}

int main(){
    long long a,b,c,d,i,j;
    scanf("%lld",&a); //input tes case
    for(i=1;i<=a;i++){
        c=0; d=0;
        scanf("%lld",&b); //input angka
        c=power(5,b-1,1000000007); //modex angka
        d=4*c%1000000007; //hasilnya dikalikan 4
        printf("Case #%lld: %lld\n",i,d); //print hasil
    }
}
```



```
C:\Users\Evelyn\Desktop\c++\panda online judge\squareception.exe
3
1
Case #1: 4
2
Case #2: 20
3
Case #3: 100
-----
Process exited after 3.614 seconds with return value 3
Press any key to continue . . .
```

50. Basis Conversion

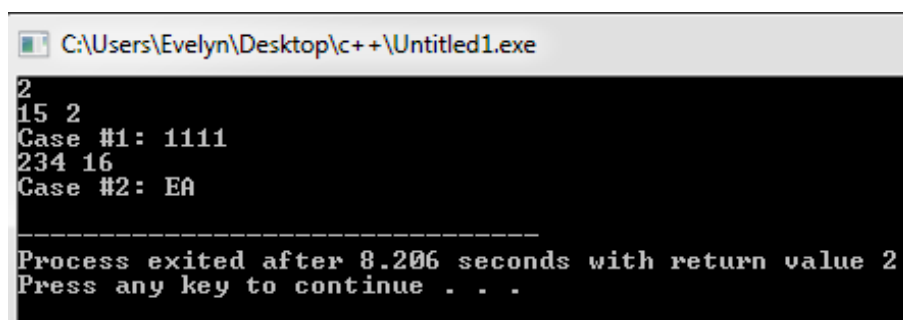
<https://pandaoj.com/problem/BASIS>

```
#include<stdio.h>

//author : Evelyn Tjitrodjojo

int main(){
    int i,a,b,c,biner=0,j;
    int x[100000];
    scanf("%d",&a); //input testcase
    for(j=1;j<=a;j++){
        scanf("%d %d",&b,&c); //input angka
        printf("%d %d",b,c); //print angka
        i=0;
        while(b>0){ //diulang hingga b>0
            x[i]=b%c; //b mod c
            b=b/c; //b/c
            printf("%d",b); //print b
            i++; //flag
        }
        printf("Case #%d: ",j); //print hasil j
        while(i--){ //print huruf sesuai inputan yg dikonversikan
            if(x[i]==10) printf("A");
            else if(x[i]==11) printf("B");
            else if(x[i]==12) printf("C");
            else if(x[i]==13) printf("D");
            else if(x[i]==14) printf("E");
            else if(x[i]==15) printf("F");
            else if(x[i]==16) printf("G");
            else if(x[i]==17) printf("H");
            else if(x[i]==18) printf("I");
            else if(x[i]==19) printf("J");
            else if(x[i]==20) printf("K");
            else if(x[i]==21) printf("L");
            else if(x[i]==22) printf("M");
            else if(x[i]==23) printf("N");
```

```
        else if(x[i]==24) printf("O");
        else if(x[i]==25) printf("P");
        else if(x[i]==26) printf("Q");
        else if(x[i]==27) printf("R");
        else if(x[i]==28) printf("S");
        else if(x[i]==29) printf("T");
        else if(x[i]==30) printf("U");
        else if(x[i]==31) printf("V");
        else if(x[i]==32) printf("W");
        else if(x[i]==33) printf("X");
        else if(x[i]==34) printf("Y");
        else if(x[i]==35) printf("Z");
        else printf("%d",x[i]);
    }
    printf("\n");
}
```



```
C:\Users\Evelyn\Desktop\c++\Untitled1.exe
2
15 2
Case #1: 1111
234 16
Case #2: EA

-----
Process exited after 8.206 seconds with return value 2
Press any key to continue . . .
```

51. Lomba Makan Beregu

<https://pandaoj.com/problem/BNPCHS2015A>

```
#include<stdio.h>

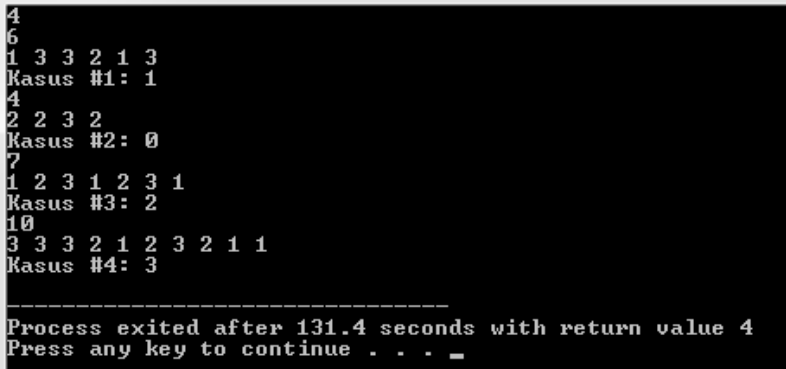
//author : Evelyn Tjitrodjojo

int main(){
    int x[100000];
    int a,b,c;
    int i,j,k;
    scanf("%d",&a); //input testcase
    for(i=1;i<=a;i++){
```

```
int l=0,m=0,n=0,min=0;

    scanf("%d",&b); //input jumlah data array
    for(j=0;j<b;j++){
        scanf("%d",&x[i]); //input data array
        if(x[i]==1) l++; //jika 1 maka flag l bertambah
        else if(x[i]==2) m++; //jika 2 maka flag m bertambah
        else if(x[i]==3) n++; //jika 3 maka flag n bertambah
    }
    if(l<=m&&l<=n) min=l; //mencari nilai min dari l,m atau n
    else if(m<=l&&m<=n) min=m;
    else if(n<=m&&n<=l) min=n;
    printf("Kasus #d: %d\n",i,min); //print test case dan nilai min
}

}
```



```
C:\Users\Evelyn\Desktop\c++\panda online judge\lomba makan beregu.exe
4
6
1 3 3 2 1 3
Kasus #1: 1
4
2 2 3 2
Kasus #2: 0
7
1 2 3 1 2 3 1
Kasus #3: 2
10
3 3 3 2 1 2 3 2 1 1
Kasus #4: 3

-----
Process exited after 131.4 seconds with return value 4
Press any key to continue . . . _
```

52. Rubik's Cube

<https://pandaoj.com/problem/BNPCHS2011QA>

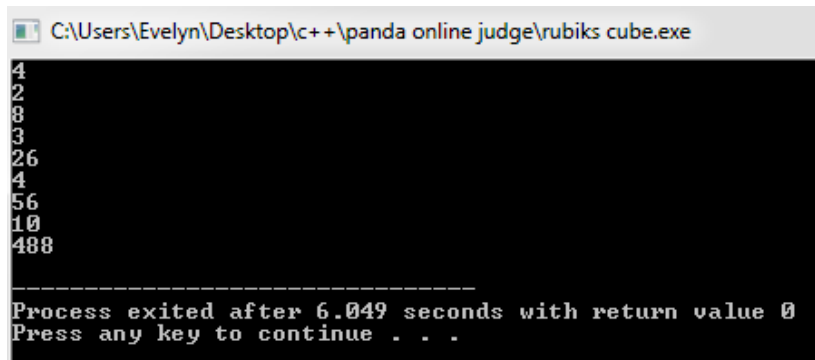
```
#include<stdio.h>

//author : Evelyn Tjitrodjojo

int main(){
    int a,b,c;
    scanf("%d",&a); //input test case
    while(a--){
        scanf("%d",&b); //input angka
        printf("%d\n", (b*b*2)+((b-2)*b*2)+((b-2)*(b-2)*2));
        //print jum kotak atas dan bwh + samping-atas-bwh + tengah
    }
```



```
}  
  
}
```



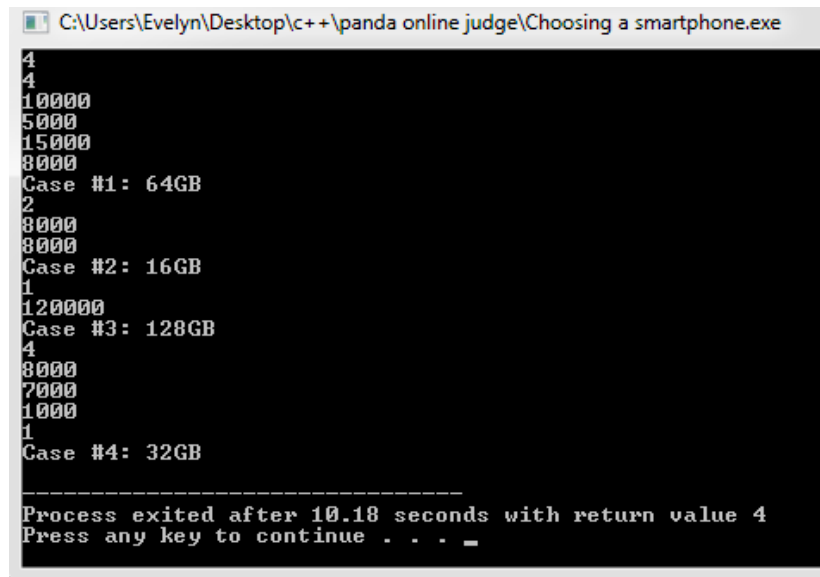
```
C:\Users\Evelyn\Desktop\c++\panda online judge\rubiks cube.exe  
4  
2  
8  
3  
26  
4  
56  
10  
488  
-----  
Process exited after 6.049 seconds with return value 0  
Press any key to continue . . .
```

53. Choosing a Smartphone

<https://pandaoj.com/problem/INC2014A>

```
#include<stdio.h>  
//author : Evelyn Tjitrodjojo  
int main(){  
    int a,b,c,jum;  
    int i,j,k;  
    scanf("%d",&a); //input test case  
    for(i=1;i<=a;i++){  
        jum=0;  
        scanf("%d",&b); //input berapa inputan harga  
        while(b--){ //diulang sesuai input brp harga  
            scanf("%d",&c); //input harga  
            jum=jum+c; //hasil penjumlahan harga test case tsb  
        }  
        if(jum<=16000) printf("Case #%d: 16GB\n",i);  
        //jika kurang dr sama dgn 16 GB maka print 16GB  
        else if(jum<=32000) printf("Case #%d: 32GB\n",i);  
        //jika kurang dr sama dgn 32 GB maka print 32GB  
        else if(jum<=64000) printf("Case #%d: 64GB\n",i);  
        //jika kurang dr sama dgn 64 GB maka print 64GB  
        else if(jum<=128000) printf("Case #%d: 128GB\n",i);  
        //jika kurang dr sama dgn 128 GB maka print 128GB  
    }  
}
```

```
}
```



```
C:\Users\Evelyn\Desktop\c++\panda online judge\Choosing a smartphone.exe
4
4
10000
5000
15000
8000
Case #1: 64GB
2
8000
8000
Case #2: 16GB
1
120000
Case #3: 128GB
4
8000
7000
1000
1
Case #4: 32GB
-----
Process exited after 10.18 seconds with return value 4
Press any key to continue . . . _
```

54. Panda's Salary

<https://pandaoj.com/problem/SALARY>

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
void sort(int arr[],int left,int right){ //fungsi sorting
    int i=left,j=right,data=(arr[right]+arr[left])/2;
    while(i<=j){
        while(arr[i]>data)i++;
        while(arr[j]<data)j--;
        if(i<=j){
            int temp=arr[i];
            arr[i]=arr[j];
            arr[j]=temp;
            i++,j--;
        }
    }
    if(left<j) sort(arr,left,j);
    if(i<right) sort(arr,i,right);
}
int main(){
```

```
int a,b,c,i,j,k,l,m,n;
char x[10000];
int y[10000];
scanf("%d",&a); //input testcase
while(a--){
    memset(y,0,sizeof(y)); //mengeset array y dengan nilai 0
    scanf("%d %d",&b,&c); //input panjang jalan
    getchar(); //untuk mengambil enter tanpa dibaca char
    for(i=0;i<b;i++){
        scanf("%c",&x[i]); //untuk input char
    }
    getchar();
    j=0;
    for(i=0;i<b;i++){
        if(x[i]=='X'&&x[i+1]=='X'){ //jika X dan stlhnya X maka
            y[j]++; //array y ditambah
        }
        else if(x[i]=='X'&&i==b-1){ //jika X di akhir
            y[j]++; //array y ditambah
        }
        else if(x[i]=='X'&&x[i+1]=='.'){ //jika X kemudian .
            y[j]++; //array y ditambah
            j++; //j juga ditambah untuk melewati titik
        }
    }
    sort(y,0,j); //sorting nilai y
    int sum=0;
    l=0;
    for(k=1;k<=c;k++){
        sum=sum+(y[l]*k); //hasil penjumlahan y dikali dgn k
        l++; //tambah nilai l
    }
    printf("%d\n",sum); //print sum
}
}
```

```
C:\Users\Evelyn\Desktop\c++\panda online judge\SALARY.exe
2
10 2
.XX..XXX..
7
5 3
X.X.X
6
-----
Process exited after 9.317 seconds with return value 0
Press any key to continue . . .
```

55. ROKET-1

<https://pandaoj.com/problem/BNPCHS2015QF>

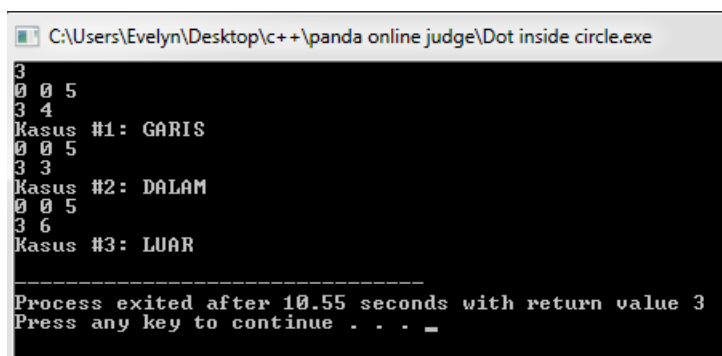
```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    long long a,b,c,d,has;
    long long i,j;
    scanf("%lld",&a); //input testcase
    for(i=1;i<=a;i++){
        scanf("%lld %lld",&b,&c); //input angka modex
        has=1;
        for(j=1;j<=b;j++){
            d=10%c; //10 mod angka
            has=(has*d)%c;
            //hasilnya dikalikan hasil 10 mod kemudian di mod kembali
        }
        printf("Kasus #%lld: %lld\n",i,has%c); //print hasil di mod c
    }
}
```

```
C:\Users\Evelyn\Desktop\c++\panda online judge\roket-1.exe
3
1 7
Kasus #1: 3
3 7
Kasus #2: 6
100 127
Kasus #3: 122
-----
Process exited after 12.67 seconds with return value 3
Press any key to continue . . .
```

56. Dot Inside Circle

<https://pandaoj.com/problem/DOTCIRCLE>

```
#include<stdio.h>
#include<math.h>
//author : Evelyn Tjitrodjojo
int main(){
    int a,d,x1,y1,x2,y2,m,n,o;
    int i,j;
    scanf("%d",&a); //input test case
    for(i=1;i<=a;i++){
        scanf("%d %d %d",&x1,&y1,&d); //input titik pusat dan jari"
        scanf("%d %d",&x2,&y2); //input letak titik
        m=pow((x2-x1),2); //kuadrat dari letak titik dgn titik pusat
        n=pow((y2-y1),2);
        o=sqrt(m+n); //akar kuadrat dari penjumlahan kedua titik kuadrat
        if(o>d)printf("Kasus #%d: LUAR\n",i);
        //jika lbh dr jari" maka letak titik di luar
        else if(o<d)printf("Kasus #%d: DALAM\n",i);
        //jika kurang dr jari" maka letak titik di dalam
        else if(o==d)printf("Kasus #%d: GARIS\n",i);
        //jika letak titik sama dengan jari" maka letak titik di garis
    }
}
```



```
C:\Users\Evelyn\Desktop\c++\panda online judge\Dot inside circle.exe
3
0 0 5
3 4
Kasus #1: GARIS
0 0 5
3 3
Kasus #2: DALAM
0 0 5
3 6
Kasus #3: LUAR

-----
Process exited after 10.55 seconds with return value 3
Press any key to continue . . . _
```

57. Squared Points

<https://pandaoj.com/problem/IDEAFUSE16F>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
```

```
int main(){
    int a,b,c,d,e;
    int i,j,k,has;
    int x[10000],y[10000];
    int max=-1001,min=1001,max2=-1001,min2=1001;
    scanf("%d",&a); //input testcase
    for(j=1;j<=a;j++){
        max=-1001,min=1001,max2=-1001,min2=1001;
        scanf("%d",&b); //input banyak data dalam array
        for(i=0;i<b;i++){
            scanf("%d %d",&x[i],&y[i]); //input data array
            if(x[i]>max) max=x[i]; //mencari nilai x max
            if(x[i]<min) min=x[i]; //mencari nilai x min
            if(y[i]>max2) max2=y[i]; //mencari nilai y max
            if(y[i]<min2) min2=y[i]; //mencari nilai y min
        }
        if((max-min)>(max2-min2))
            //jika selisih max dan min array x lbh besar
            has=(max-min)*(max-min);
        //hasil=selisih max dan min sebagai sisi dikali sisi
        else if((max-min)<=(max2-min2))
            //jika selisih max dan min array y lbh besar
            has=(max2-min2)*(max2-min2);
        //hasil=selisih max dan min array y sebagai sisi dikali sisi
        printf("Case #d: %d\n",j,has); //print test case dan hasil
    }
}
```

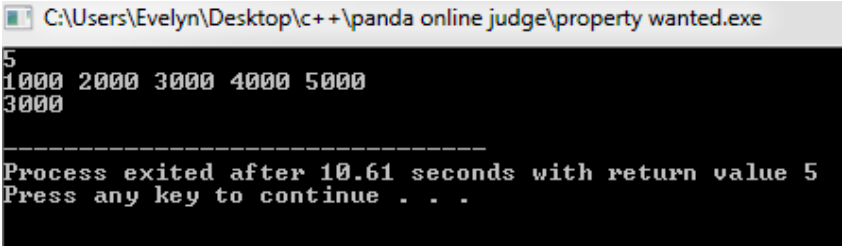
```
C:\Users\Evelyn\Desktop\c++\panda online judge\Squared points.exe
3
4
1 1
4 2
2 3
2 5
Case #1: 16
4
-10 0
10 0
0 10
0 -10
Case #2: 400
3
100 20
50 -10
150 -10
Case #3: 10000
-----
Process exited after 9.698 seconds with return value 3
Press any key to continue . . .
```

58. Property Wanted

<https://pandaoj.com/problem/PROPERTY>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
void sort(long long arr[],long long left,long long right){ //fungsi sorting
    long long i=left,j=right,data=(arr[right]+arr[left])/2;
    while(i<=j){
        while(arr[i]<data)i++;
        while(arr[j]>data)j--;
        if(i<=j){
            long long temp=arr[i];
            arr[i]=arr[j];
            arr[j]=temp;
            i++,j--;
        }
    }
    if(left<j) sort(arr,left,j);
    if(i<right) sort(arr,i,right);
}
int main(){
    long long i,j,a,b,c,d;
    long long sum=0;
    long long x[10000];
    scanf("%lld",&a); //input test case
```

```
for(i=0;i<a;i++){
    scanf("%lld",&x[i]); //input data array
    sum=sum+x[i]; //jumlah data
}
sort(x,0,a-1); //sort data
d=sum/a; //mencari rata-rata data
j=0;
while(x[j]<=d && j<a){
    j++;
    //jika data kurang dari rata-rata dan tidak melebihi jum array
}
printf("%lld\n",x[j-1]); //print array ke j-1
}
```



```
C:\Users\Evelyn\Desktop\c++\panda online judge\property wanted.exe
5
1000 2000 3000 4000 5000
3000
-----
Process exited after 10.61 seconds with return value 5
Press any key to continue . . .
```

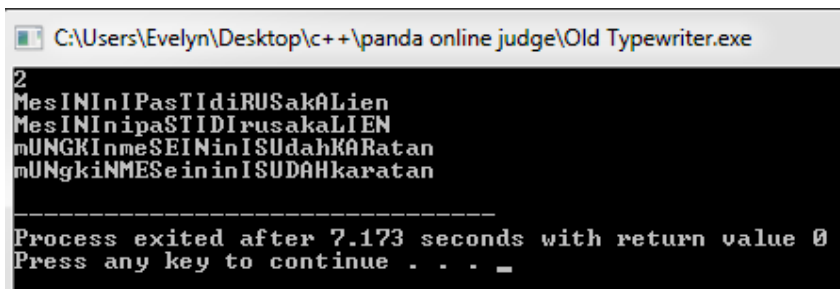
59. Old Typewriter

<https://pandaoj.com/problem/TYPEWRITER>

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
int main(){
    int a,i,flag,j,lenght;
    char x[10000];
    scanf("%d",&a); //input test case
    while(a--){
        scanf("%s",&x); //input string
        lenght=2; //panjang awal string 2 yang dicek
        if(x[0]<97){ //jika huruf kecil di string ke 0
            flag=1; //beri flag
        }
    }
```



```
        else flag=0; //jika huruf besar flag=0
        for(i=1;i<strlen(x);lenght++){ //perulangan - panjang string x
            for(j=0;j<lenght && i< strlen(x);j++,i++){
                if(flag==1 && x[i]<97) x[i] = x[i]+32;
            }
            //jika flag 0 dan array x huruf kecil, ditmbh 32 menjadi huruf besar
            if(flag==0 && x[i]>=97) x[i] = x[i]-32;
            //jika flag 1 dan array x huruf besar, dikurang 32 menjadi huruf kecil
        }
        flag=(flag+1)%2; //setiap pindah huruf, flag diubah
    }
    printf("%s\n",x); //print hasil string yg sdh diubah
}
}
```



60. Flood

<https://pandaoj.com/problem/FLOOD>

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
int y[1000][1000];
int benar;
void path(int l,int m,int b,int c,char x[][1000]){ //fungsi backtracking
    y[l][m]=1;
    if(l==0||l==b-1||m==0||m==c-1){ //batas backtracking
        benar=0;
        return;
    }
    if((x[l][m+1]=='#' || y[l][m+1]==1)&&(x[l-1][m]=='#' || y[l-1][m]==1)
    &&(x[l][m-1]=='#' || y[l][m-1]==1)&&(x[l+1][m]=='#' || y[l+1][m]==1)){
```

```
        benar=1; //batas backtracking
        return;
    }

    if (m+1<c&&x[l][m+1]!='#'&&y[l][m+1]==0) path(l,m+1,b,c,x);
    if (l-1<b&&x[l-1][m]!='#'&&y[l-1][m]==0) path(l-1,m,b,c,x);
    if (m-1<c&&x[l][m-1]!='#'&&y[l][m-1]==0) path(l,m-1,b,c,x);
    if (l+1<b&&x[l+1][m]!='#'&&y[l+1][m]==0) path(l+1,m,b,c,x);
} //rekursif backtracking

int main(){
    int a,b,c,l,m;
    int i,j,k;
    char x[1000][1000];
    scanf("%d",&a); //input testcase
    for(i=1;i<=a;i++){
        scanf("%d %d",&b,&c); //input ordo
        memset(y,0,sizeof(y)); //set semua nilai array y = 0
        benar=0;
        getchar(); //utk mengambil enter
        for(j=0;j<b;j++){
            for(k=0;k<c;k++){
                scanf("%c",&x[j][k]); //input matriks char
            }
            getchar();
        }
        for(j=0;j<b;j++){
            for(k=0;k<c;k++){
                if(x[j][k]=='.'&&y[j][k]==0){ //jika terdpt '.'
                    l=j; //mencatat lokasi
                    m=k;
                    path(l,m,b,c,x); //backtracking
                    if(benar==1)break;
                    //jika sdh benar lgs break
                }
            }
        }
    }
}
```

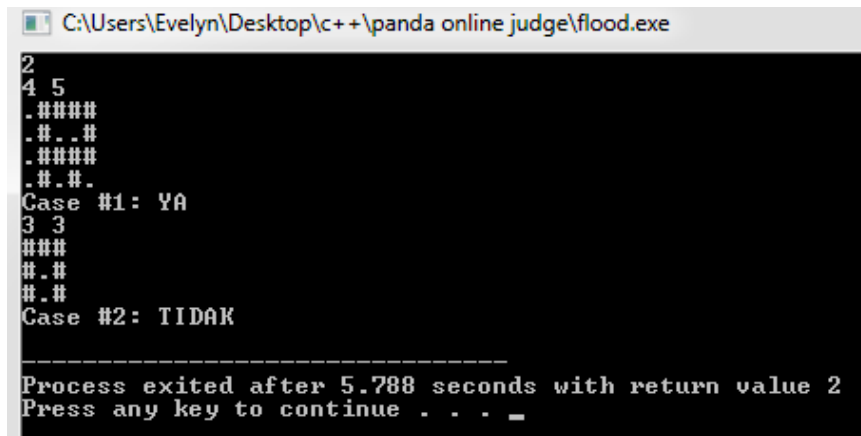
```
        if(benar==1)break;

    }

    if(benar==1)printf("Case #%d: YA\n",i); //jika benar print ya
    else printf("Case #%d: TIDAK\n",i); //jika salah print tidak

}

}
```



```
C:\Users\Evelyn\Desktop\c++\panda online judge\flood.exe
2
4 5
.####
.#..#
.####
.#.#.
Case #1: YA
3 3
###
###
Case #2: TIDAK

-----
Process exited after 5.788 seconds with return value 2
Press any key to continue . . . _
```

61. Nosy Duck

<https://pandaoj.com/problem/DUCK>


```
#include<stdio.h>

//author : Evelyn Tjitrodjojo

void sort(int arr[],int left,int right){ //fungsi sort
    int i=left,j=right,data=(arr[right]+arr[left])/2;
    while(i<=j){
        while(arr[i]>data)i++;
        while(arr[j]<data)j--;
        if(i<=j){
            int temp=arr[i];
            arr[i]=arr[j];
            arr[j]=temp;
            i++,j--;
        }
    }

    if(left<j) sort(arr,left,j);
    if(i<right) sort(arr,i,right);
}
```

```
}  
int main(){  
    int a,b,c,d,i,j;  
    int x[10000];  
    scanf("%d",&a); //input test case  
    while(a--){  
        scanf("%d",&b); //input banyak bebek  
        for(i=0;i<b;i++){  
            scanf("%d",&x[i]); //input umur bebek  
        }  
        sort(x,0,b-1); //sort umur bebek  
        for(i=0;i<b;i++){  
            printf("%d ",x[i]); //print umur bebek  
        }  
        printf("\n");  
    }  
}
```



```
C:\Users\Evelyn\Desktop\c++\panda online judge\nosy duck.exe  
2  
5  
2 5 10 7 3  
10 7 5 3 2  
4  
100 2 40 31  
100 40 31 2  
-----  
Process exited after 2.532 seconds with return value 0  
Press any key to continue . . .
```

62. Musical Instrument

<https://pandaoj.com/problem/MUSIC>

```
#include<stdio.h>  
//author : Evelyn Tjitrodjojo  
int main(){  
    int a,b=0,c,i,j;  
    int x[10000];  
    scanf("%d",&a); //input test case  
    for(i=0;i<a;i++){
```

```
        scanf("%d",&x[i]); //input array note
    }
    if(x[0]%2==0){ //jika note pertama bisa di mod 2
        for(i=1;i<a;i+=2){
            if(x[i]%2==0){ //jika note bisa di mod 2
                b++;
                break; //flag + break
            }
        }
        for(i=2;i<a;i+=2){
            if(x[i]%2==1){ //jika note di mod 2 == 1
                b++;
                break; //b ditambah dan break
            }
        }
    }
    if(x[0]%2==1){ //jika note pertama di mod 2 = 1
        for(i=1;i<a;i+=2){
            if(x[i]%2==1){ //jika note berikutnya di mod 2=1
                b++;
                break; //tandai dan break
            }
        }
        for(i=2;i<a;i+=2){
            if(x[i]%2==0){ //jika array berikutnya dimod 2= 0
                b++;
                break; //tandai b dan break
            }
        }
    }
    if(b!=0)printf("0\n");
    //jika tanda b tidak sm dengan 0, print 0 (tdk suka)
    else printf("1\n");
    //jika tanda b sm dengan 0, print 1 (note disukai)
}
```

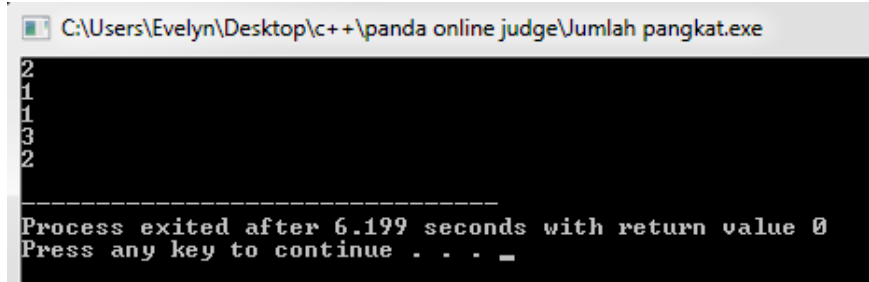
```
C:\Users\Evelyn\Desktop\c++\panda online judge\musical instrument.exe
13
5 6 5 4 3 4 5 2 3 4 3 4 5
1
-----
Process exited after 6.955 seconds with return value 0
Press any key to continue . . .
```

63. Jumlah Pangkat

<https://pandaoj.com/problem/BNPCHS2009I>

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
int arr[1000001];
long long N=10;
int exponentiation(long long base,long long exp){ // fungsi exponen
    if (exp == 0)    return 1;
    if (exp == 1)    return base % N;
    long int t = exponentiation(base, exp / 2);
    t = (t * t) % N;
    // if exponent is even value
    if (exp % 2 == 0)    return t;
    // if exponent is odd value
    else    return ((base % N) * t) % N;
}
void precomp(){ //fungsi simpan dalam array
    long long i;
    arr[0]=0;
    for(i=1;i<=1000000;i++){
        arr[i]=(arr[i-1]+exponentiation(i,i))%10; //hasil jumlah pangkat
    }
}
int main(){
    int a,b;
    memset(arr,0,sizeof(arr)); //mereset semua nilai arr = 0
    precomp(); //menjalankan fungsi precom
    scanf("%d",&a); //input test case
```

```
while(a--){  
    scanf("%d",&b); //input angka  
    printf("%d\n",arr[b]); //langsung print arr ke angka  
}  
}
```

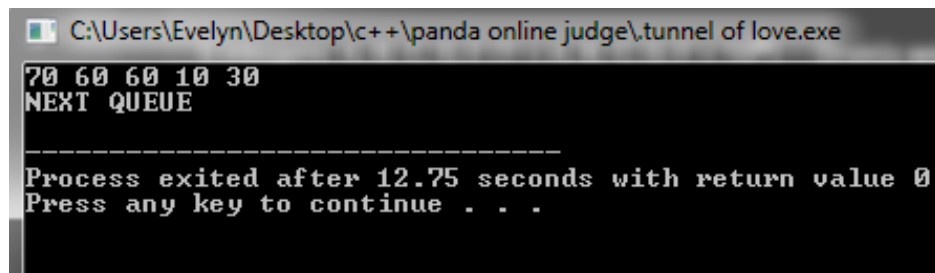


64. Tunnel of Love

<https://pandaoj.com/problem/LOVE>

```
#include<stdio.h>  
//author : Evelyn Tjitrodjojo  
int main(){  
    long long a1,a2,b,c,sum,kapal;  
    scanf("%lld%lld%lld%lld%lld",&a1,&a2,&b,&c,&kapal);  
    //input berat pasangan a, dan dua penumpang lain serta berat maks pd kapal  
    sum=a1+a2+b+c; //jumlah berat semua penumpang  
    if(sum<=kapal)printf("0\n"); //jika jumlah kurang dari berat kapal  
    else if((a1+a2)>kapal)printf("NEXT QUEUE\n");  
    //jika berat pasangan melebihi berat kapal  
    else if((a1+a2)<=kapal){ //jika berat pasangan kurang dari berat kapal  
        if((sum-b)<=kapal||(sum-c)<=kapal){  
            //jika dikurangi salah satu penumpang selain pasangan  
            if(b>c)printf("3\n");  
            //jika berat penumpang satu lbh berat dari penumpang kedua  
            else printf("4\n");  
            //jika berat penumpang kedua lbh berat dari penumpang pertama  
        }  
        else printf("PERFECT RIDE\n"); //selain semua syarat  
    }  
}
```

```
return 0;  
}
```



65. Dividing Sweets

<https://pandaoj.com/problem/IDEAFUSE16A>

```
#include<stdio.h>  
//author : Evelyn Tjitrodjojo  
int main(){  
    int a,b,c,d,i,j,m;  
    scanf("%d",&a); //input test case  
    for(i=1;i<=a;i++){  
        c=0; d=0;  
        scanf("%d",&b); //input jumlah permen  
        for(j=0;j<b;j++){  
            scanf("%d",&m); //input jenis permen  
            if(m==1) c++; //tambah c bila isi permen 1  
            else if(m==2) d++; //tambah d bila isi permen 2  
        }  
        if(c%2==0 && c>0) printf("Case #%d: 0\n",i);  
        //jika jumlah permen isi 1 di mod 2 = 0 dan jumlah permen isi 1>0  
        else if(c%2==1&&c>0) printf("Case #%d: 1\n",i);  
        //jika jumlah permen isi 1 di mod 2 = 1 dan jumlah permen isi 1>0  
        else if(d%2==1 && c==0) printf("Case #%d: 2\n",i);  
        //jika jumlah permen isi 2 di mod 2 = 1 dan jumlah permen isi 1=0  
        else if(d%2==0 && c==0) printf("Case #%d: 0\n",i);  
        //jika jumlah permen isi 2 di mod 2 = 0 dan jumlah permen isi 1=0  
    }  
}
```



```
C:\Users\Evelyn\Desktop\c++\panda online judge\dividing sweet.exe
2
3
1 2 2
Case #1: 1
5
1 2 1 2 2
Case #2: 0

-----
Process exited after 3.14 seconds with return value 2
Press any key to continue . . .
```

66. Turnamen Panko

<https://pandaoj.com/problem/BNPCHS2010A>

```
#include<stdio.h>
#include<math.h>
//author : Evelyn Tjitrodjojo
int main(){
    int a,b,c,d,e,i,j,k;
    scanf("%d",&a); //input test case
    while(a--){
        d=0; e;
        scanf("%d",&b); //input jumlah array 2 pangkat b
        for(i=1;i<=pow(2,b);i++){
            scanf("%d",&c); //input data power
            if(d<c){ //jika d < c maka ambil nilai i nya
                d=c;
                e=i;
            }
        }
        printf("%d\n",e); //print nilai i
    }
}
```

```
C:\Users\Evelyn\Desktop\c++\panda online judge\turnamen panko.exe
1
3
5 2 7 9 1 3 6 4
4

-----
Process exited after 49.88 seconds with return value 0
Press any key to continue . . .
```

67. Play, play, play!

<https://pandaoj.com/problem/JC7A>

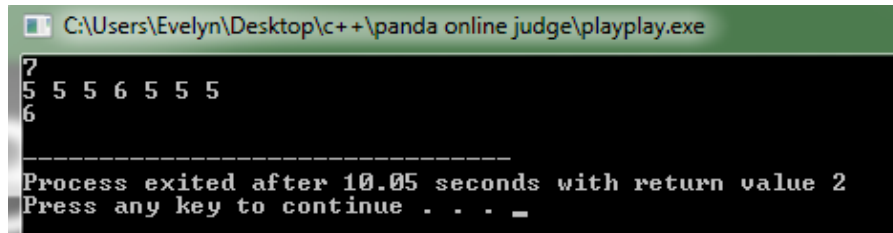
```
#include<stdio.h>

//author : Evelyn Tjitrodjojo

void sort(int arr[],int left,int right){ //fungsi sorting
    int i=left,j=right,data=(arr[right]+arr[left])/2;
    while(i<=j){
        while(arr[i]<data)i++;
        while(arr[j]>data)j--;
        if(i<=j){
            int temp=arr[i];
            arr[i]=arr[j];
            arr[j]=temp;
            i++,j--;
        }
    }
    if(left<j) sort(arr,left,j);
    if(i<right) sort(arr,i,right);
}

int main(){
    int a,b,c,d;
    int i,j,k,x[1000],m,n;
    scanf("%d",&a); //input test case
    for(i=0;i<a;i++){
        scanf("%d",&x[i]); //input data array score
    }
    m=0; n=0;
    sort(x,0,a-1); //sort data array score
    for(j=0;j<a;j+=2){
        n=n+x[j]; //jumlahkan data nomer genap
    }
    for(k=1;k<a;k+=2){
        m=m+x[k]; //jumlahkan data nomer ganjil
    }
}
```

```
    }  
    if(n<m) b=m-n; //jika n<m maka m-n  
    else b=n-m; //jika n>m maka n-m  
    printf("%d\n",b); //print selisih  
}
```

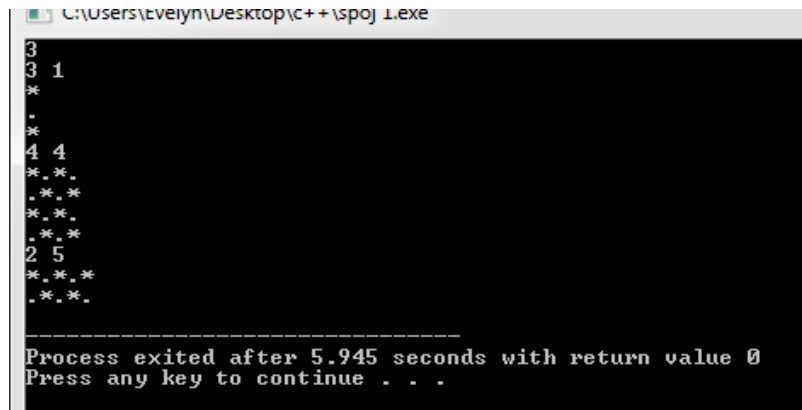


```
C:\Users\Evelyn\Desktop\c++\panda online judge\playplay.exe  
7  
5 5 6 5 5 5  
6  
-----  
Process exited after 10.05 seconds with return value 2  
Press any key to continue . . . _
```

68. CPTTRN1 - Character Patterns (Act 1)

<https://www.spoj.com/problems/CPTTRN1/>

```
#include<stdio.h>  
//author : Evelyn Tjitrodjojo  
int main(){  
    int t,l,c,x,i,j,baris,kolom;  
    scanf("%d",&t); //input tes case  
    for(x=1;x<=t;x++){  
        scanf("%d %d",&l,&c); //input baris dan kolom  
        for(i=0;i<l;i++){  
            for(j=0;j<c;j++){  
                if((i+j)%2==0) printf("*");  
                //jika baris ditambah kolom di mod 2 = 0, print *  
                else printf("."); //selain itu print titik  
            }  
            printf("\n");  
        }  
    }  
    return 0;  
}
```



The screenshot shows a terminal window with the title "C:\Users\Evelyn\Desktop\c++\spoj 1.exe". It displays the output of a program that prints character patterns for three test cases. Test case 3 shows a 3x1 pattern of asterisks. Test case 4 shows a 4x4 pattern of asterisks. Test case 5 shows a 2x5 pattern of asterisks. At the bottom, it says "Process exited after 5.945 seconds with return value 0" and "Press any key to continue . . .".

69. CPTTRN2 - Character Patterns (Act 2)

<https://www.spoj.com/problems/CPTTRN2/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int t,l,c,x,i,j,m,n;
    scanf("%d",&t); //input test case
    for(x=1;x<=t;x++){
        scanf("%d %d",&l,&c); //input baris dan kolom
        for(i=0;i<l;i++){
            for(j=0;j<c;j++){
                if(i==0||j==0||i==l-1||j==c-1) printf("*");
                //Jika diujung-ujung baris dan kolom print *
                else printf("."); //selain itu print .
            }
            printf("\n"); //enter setiap baris
        }
    }
    return 0;
}
```

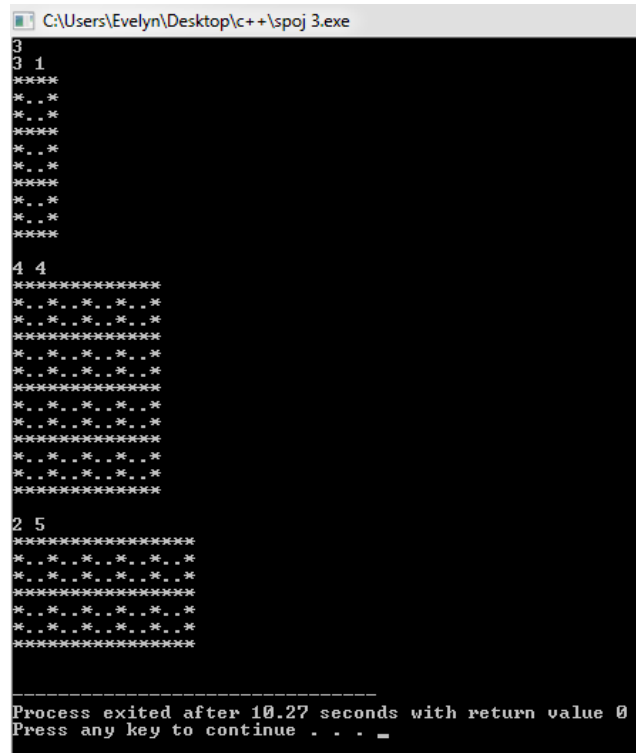
```
C:\Users\Evelyn\Desktop\c++\spoj 2.exe
3
3 1
**
**
**
4 4
****
*.*
*.*
****
2 5
*****
*****

-----
Process exited after 10.79 seconds with return value 0
Press any key to continue . . . _
```

70. CPTTRN3 - Character Patterns (Act 3)

<https://www.spoj.com/problems/CPTTRN3/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int t,l,c,x,i,j,m,n,a,b;
    scanf("%d",&t); //input testcase
    for(x=1;x<=t;x++){
        scanf("%d %d",&l,&c); //input panjang baris dan kolom
        a=(l*3)+1; //panjang baris dikalikan 3 ditambah 1
        b=(c*3)+1; //panjang kolom dikalikan 3 ditambah 1
        for(i=0;i<a;i++){
            for(j=0;j<b;j++){
                if(i==0||j==0||i==a-1||j==b-1)printf("*");
                //jika diujung" baris dan kolom diberi *
                else if(i%3==0||j%3==0) printf("*");
                //jika baris atau kolom ke tiga print *
                else printf("."); //selain itu print .
            }
            printf("\n"); //print enter tiap baris
        }
        printf("\n");
    }
    return 0;
}
```



```
C:\Users\Evelyn\Desktop\c++\spoj 3.exe
3 1
*****
*   *
*   *
*****
*   *
*   *
*****
*   *
*   *
*****

4 4
*****
*   *   *   *
*   *   *   *
*****
*   *   *   *
*   *   *   *
*****
*   *   *   *
*   *   *   *
*****

2 5
*****
*   *   *   *
*   *   *   *
*****
*   *   *   *
*   *   *   *
*****

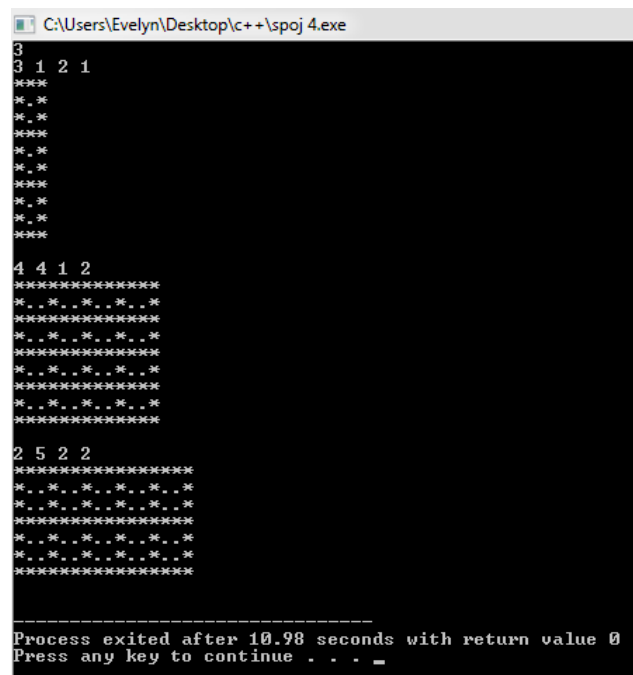
Process exited after 10.27 seconds with return value 0
Press any key to continue . . .
```

71. CPTTRN4 - Character Patterns (Act 4)

<https://www.spoj.com/problems/CPTTRN4/>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int t,l,c,x,i,j,m,n,a,b,h,w,a1,b1;
    scanf("%d",&t); //input testcase
    for(x=1;x<=t;x++){
        scanf("%d %d %d %d",&l,&c,&h,&w);
        //input panjang baris, kolom,tinggi dan lebar persegi
        a=h+1; //tinggi persegi ditambah 1
        b=w+1; //lebar persegi ditambah 1
        a1=(a*1)+1; //panjang baris dikali tinggi ditambah 1
        b1=(b*c)+1; //panjang kolom dikali lebar ditambah 1
        for(i=0;i<a1;i++){
            for(j=0;j<b1;j++){
                if(i==0||j==0||i==a1-1||j==b1-1)printf("*");
                //print * diujung-ujung baris dan kolom
                else if(i%a==0||j%b==0) printf("*");
            }
        }
    }
}
```

```
        //print jika dimod a atau b, print *  
        else printf("."); //selain itu print .  
    }  
    printf("\n");    //print enter untuk baris  
}  
printf("\n");  
}  
return 0;  
}
```



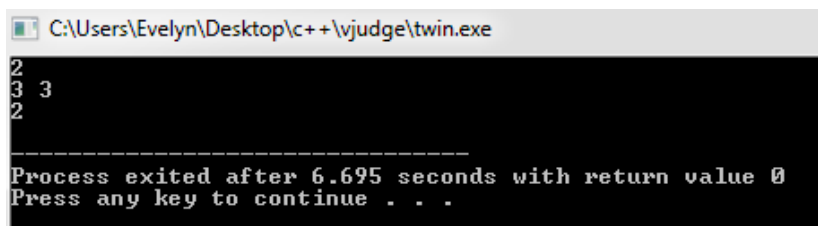
The screenshot shows a Windows command prompt window titled "C:\Users\Evelyn\Desktop\c++\spoj 4.exe". It displays the output of a program for three test cases. Each test case consists of a line of numbers followed by a star pattern. The first test case shows "3 1 2 1" followed by a 3x3 star pattern. The second test case shows "4 4 1 2" followed by a 4x4 star pattern. The third test case shows "2 5 2 2" followed by a 2x5 star pattern. At the bottom, it says "Process exited after 10.98 seconds with return value 0" and "Press any key to continue . . .".

72. Twins

<https://vjudge.net/problem/CodeForces-160A>

```
#include<stdio.h>  
  
//author : Evelyn Tjitrodjojo  
  
void sort(int arr[],int left,int right){ //fungsi sorting  
    int i=left,j=right,data=(arr[right]+arr[left])/2;  
    while(i<=j){  
        while(arr[i]<data)i++;  
        while(arr[j]>data)j--;  
        if(i<=j){
```

```
        int temp=arr[i];
        arr[i]=arr[j];
        arr[j]=temp;
        i++,j--;
    }
}
if(left<j) sort(arr,left,j);
if(i<right) sort(arr,i,right);
}
int main(){
    int a,i,b=0,c;
    scanf("%d",&a); //input brp koin
    int x[a];
    for(i=0;i<a;i++){
        scanf("%d",&x[i]); //input angka koin
        b=b+x[i]; //jumlah kan semua
    }
    c=b/2; //dirata-rata
    sort(x,0,a-1); //sort array data koin
    int d=0,e=0;
    for(i=a-1;i>=0;i--){
        d++; //flag bertambah
        e=e+x[i]; //tambahkan terus data koin dari belakang
        if(e>c)break; //jika jumlah sudah lebih besar dari rata", dibreak
    }
    printf("%d\n",d); //print jumlah flag
return 0;
}
```



The screenshot shows a terminal window titled "C:\Users\Evelyn\Desktop\c++\vjudge\twin.exe". The input is "2 3 2" and the output is "2". Below the output, it says "Process exited after 6.695 seconds with return value 0" and "Press any key to continue . . .".

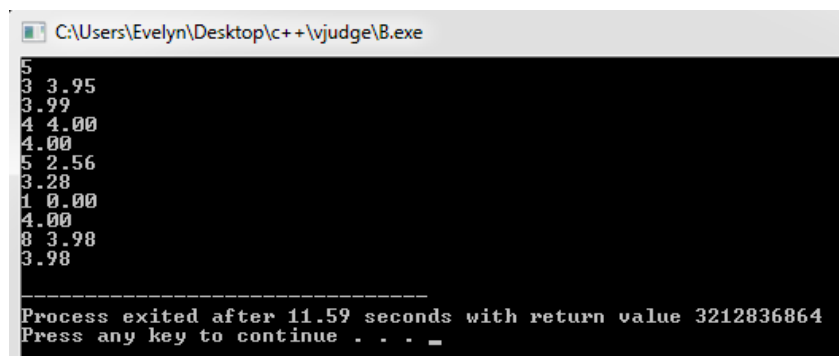
73. High CG Boy

<https://vjudge.net/problem/SPOJ-CGBOY>

```
#include<stdio.h>

//author : Evelyn Tjitrodjojo

int main(){
    float a,b,c,d;
    scanf("%f",&a); //input testcase
    while(a--){
        d=0;
        scanf("%f %f",&b,&c); //input semester dan ipk
        if(b>1&&b<=8){
            //jika semester lebih besar dari 1 dan kurang dari sama dengan 8
            d=((c*(b-1))+(4*(8-(b-1))))/8;
            //ipk dikali dengan semester-1 ditambah ipk 4 dikali sisa semester dibagi 8
        }
        else if(b==1) d=4; //jika msh semester satu artinya lgs ipk 4
        printf("%.2f\n",d); //print hasil d
    }
}
```



```
C:\Users\Evelyn\Desktop\c++\vjudge\B.exe
5
3 3.95
3.99
4 4.00
4.00
5 2.56
3.28
1 0.00
4.00
8 3.98
3.98
-----
Process exited after 11.59 seconds with return value 3212836864
Press any key to continue . . . _
```

74. Coder Or NonCoder

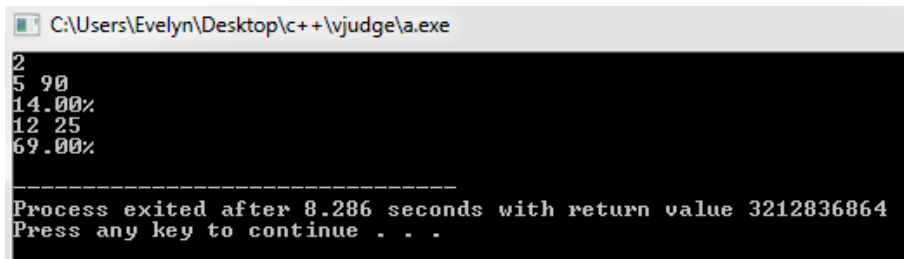
<https://vjudge.net/problem/SPOJ-CODECODE>

```
#include<stdio.h>

//author : Evelyn Tjitrodjojo

int main(){
    float a,b,c,d,e,f;
    scanf("%f",&a); //input testcase
```

```
while(a--){
    scanf("%f %f",&b,&c); //input banyak coder non coder
    d=b*(c/100); //banyak coder dikali persen coder
    e=(100-b)*((100-c)/100);
    //banyak non coder dikali persen non coder
    printf("%.2f%%\n",d+e); //print jumlah persen coder dan non coder
}
}
```

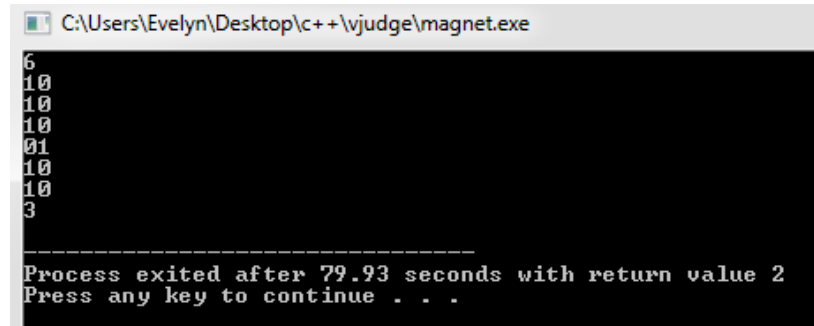


```
C:\Users\Evelyn\Desktop\c++\vjudge\1.exe
2
5 90
14.00%
12.25
69.00%
-----
Process exited after 8.286 seconds with return value 3212836864
Press any key to continue . . .
```

75. Magnets

<https://vjudge.net/problem/CodeForces-122A>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    long long i,a,c=0;
    scanf("%lld",&a); //input test case
    long long x[a];
    for(i=0;i<a;i++){
        scanf("%lld",&x[i]); //input angka
        c++; //flag c bertambah
        if(x[i]==x[i-1]) c--; //jika ada huruf kembar kurangi flag
    }
    printf("%lld\n",c); //print flag
}
```

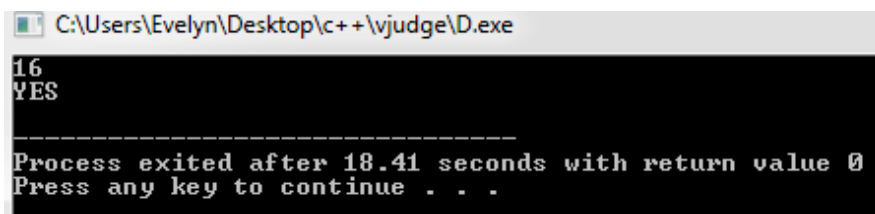


```
C:\Users\Evelyn\Desktop\c++\vjudge\magnet.exe
6
10
10
10
10
01
10
10
10
3
-----
Process exited after 79.93 seconds with return value 2
Press any key to continue . . .
```

76. Lucky Division

<https://vjudge.net/problem/CodeForces-122A>

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main (){
    int a,b=0,i;
    scanf("%d",&a); //input test case
    int x[14]={4,7,47,44,74,77,444,447,474,477,744,747,774,777}; //angka lucky
    for(i=0;i<14;i++){
        if(a%x[i]==0){ //jika angka dapat dimod=0 salah satu angka lucky
            b++; //ditandai
            break;
        }
    }
    if (b>0) printf("YES\n"); //jika dapat di mod, print yes
    else printf("NO\n"); //selain itu print tidak
    return 0;
}
```

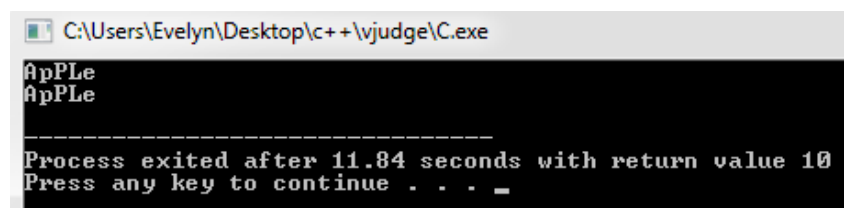


```
C:\Users\Evelyn\Desktop\c++\vjudge\D.exe
16
YES
-----
Process exited after 18.41 seconds with return value 0
Press any key to continue . . .
```

77. Word Capitalization

<https://vjudge.net/problem/CodeForces-281A>

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
int main(){
    char x[1001];
    int i;
    scanf("%s",&x); //input string
    if(x[0]=='Q' || x[0]=='W' || x[0]=='E' || x[0]=='R' || x[0]=='T' || x[0]=='Y' || x[0]
    == 'U' || x[0]=='I' || x[0]=='O' || x[0]=='P' || x[0]=='A' || x[0]=='S' || x[0]=='D' || x[0]=='F'
    || x[0]=='G' || x[0]=='H' || x[0]=='J' || x[0]=='K' || x[0]=='L' || x[0]=='Z' || x[0]=='X' || x
    [0]=='C' || x[0]=='V' || x[0]=='B' || x[0]=='N' || x[0]=='M'){
        //jika string ke 0 huruf besar
        printf("%s",x); //langsung print string
    }
    else{
        printf("%c",(x[i]-32));
        //jika huruf kecil, maka dikurang 32,menjadi huruf besar
        for(i=1;i<strlen(x);i++){
            printf("%c",x[i]); //print string stlh diubah
        }
    }
    printf("\n"); //beri enter
}
```

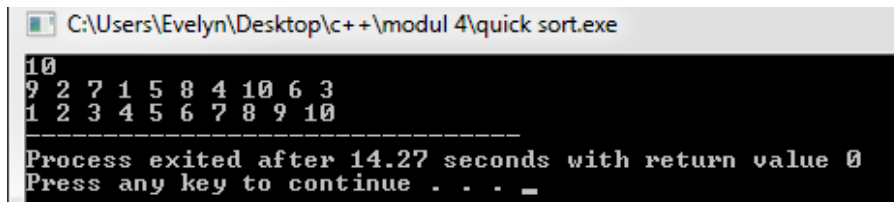


78. Quick Sort

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
void sort(int arr[],int left,int right){ //fungsi sorting
    int i=left,j=right,data=(arr[right]+arr[left])/2; //data=panjang array/2
    while(i<=j){ //diulang selama i lebih kecil dr j
        while(arr[i]<data)i++; //jika array sudah benar, flag ditambah
```

```
        while(arr[j]>data)j--;
        if(i<=j){ //jika i lebih kecil
            int temp=arr[i];
            arr[i]=arr[j]; //swap
            arr[j]=temp;
            i++,j--;
        }
    }
    if(left<j) sort(arr,left,j); //rekursi dari kiri
    if(i<right) sort(arr,i,right); //rekursi dari kanan
}

int main(){
    int i,a;
    int arr[1000];
    scanf("%d",&a); //input test case
    for(i=0;i<a;i++){
        scanf("%d",&arr[i]); //input data
    }
    sort(arr,0,a-1); //jalankan fungsi sorting
    for(i=0;i<a;i++){
        printf("%d ",arr[i]); //print data setelah disorting
    }
    printf("\n"); //enter akhir
    return 0;
}
```

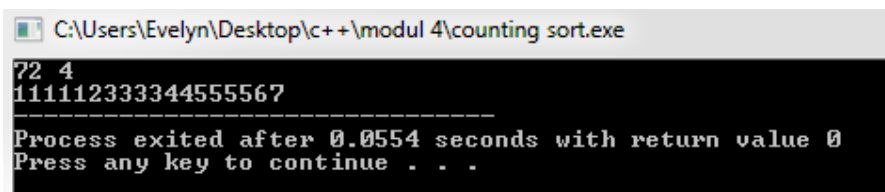


```
C:\Users\Evelyn\Desktop\c++\modul 4\quick sort.exe
10
9 2 7 1 5 8 4 10 6 3
1 2 3 4 5 6 7 8 9 10
-----
Process exited after 14.27 seconds with return value 0
Press any key to continue . . . _
```

79. Counting Sort

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

```
//author : Evelyn Tjitrodjojo
int main(){
    int basket[8];
    int arr[]={1,2,3,5,6,7,4,3,3,1,3,1,5,1,5,1,4,5}; //isi array
    memset(basket,0,sizeof(basket)); //mengeset array basket menjadi 0
    int i;
    printf("%d %d\n",sizeof(arr),sizeof(int)); //print ukuran array
    for(i=0;i<(sizeof(arr)/sizeof(int));i++){
        //bagi ukuran array dan ukuran integer sebagai batas
        basket[arr[i]]++; //tambah array basket
    }
    for(i=0;i<=7;i++)
        while(basket[i]--)
            printf("%d",i); //print data yang sudah disort
}
```



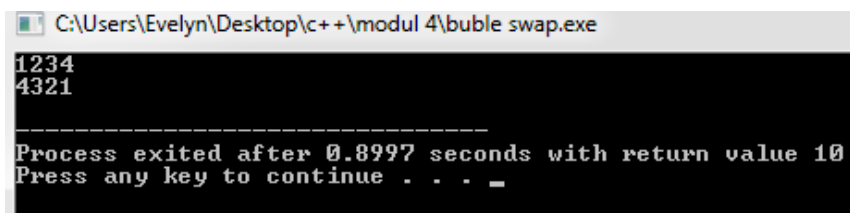
```
C:\Users\Evelyn\Desktop\c++\modul 4\counting sort.exe
72 4
111112333344555567
-----
Process exited after 0.0554 seconds with return value 0
Press any key to continue . . .
```

80. Bubble Swap

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
void swap(int*a,int*b){ //fungsi swap
    int temp=*a;
    *a=*b;
    *b=temp;
}
int main(){
    int i,j,n=4;
    int arr[4]={1,3,4,2}; //data
    //sort dari 1-4
    for(i=0;i<n;i++){
```

```
        for(j=0;j<n;j++){
            if(arr[i]<arr[j]){ //jika ada yang belum urut diswap
                swap(&arr[i],&arr[j]);
            }
        }
    }
    for(j=0;j<n;j++) printf("%d",arr[j]); //print data sort dari 1-4
    printf("\n");

    //sort dari 4-1
    for(i=0;i<n;i++){
        for(j=0;j<n;j++){
            if(arr[i]>arr[j]){ //jika sebelah kanan masih lebih besar
                swap(&arr[i],&arr[j]); //diswap
            }
        }
    }
    for(j=0;j<n;j++) printf("%d",arr[j]); //print data hasil sorting
    printf("\n");//print enter akhir
}
```



```
C:\Users\Evelyn\Desktop\c++\modul 4\buble swap.exe
1234
4321
-----
Process exited after 0.8997 seconds with return value 10
Press any key to continue . . . _
```

81. Jidat Tsunade

Latihan Praktikum Pattern

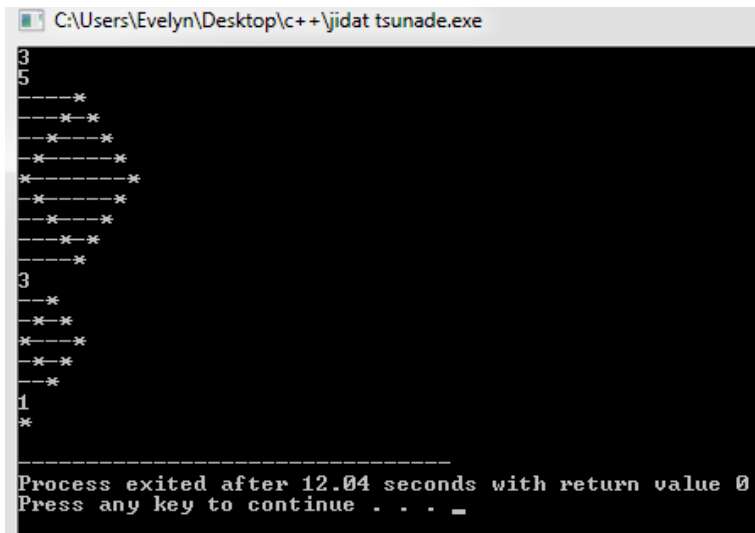
```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int x,t,a,i,j,b,c,k;
    scanf("%d",&x); //input test case
    for(t=0;t<x;t++){
```

```
scanf("%d",&a); //input angka sbg tinggi
for(i=0;i<a;i++){ //fungsi segitiga atas
    for(j=1;j<a-i;j++){
        printf("-");
    } //print - membentuk segitiga
    for(k=0;k<=i;k++){
        if(k==0){
            printf("*");
            //kemudian print * di sblhnya paling luar
        }
        else printf("-");
    } //selain itu print -
    for(c=1;c<=i;c++){
        if(c==i){
            printf("*");
        } //untuk print * terluar
        else printf("-"); //selain itu -
    }

    printf("\n");
}
for(i=1;i<a;i++){ //fungsi untuk segitiga bawah, kebalikan diatas
    for(j=1;j<i+1;j++){
        printf("-");
    }
    for(k=a-i;k>0;k--){
        if(k==a-i){
            printf("*");
        }
        else printf("-");
    }
    for(c=a-i;c>1;c--){
        if(c==2){
            printf("*");
        }
        else printf("-");
    }
}
```



```
        printf("\n");  
    }  
    }  
    return 0;  
}
```

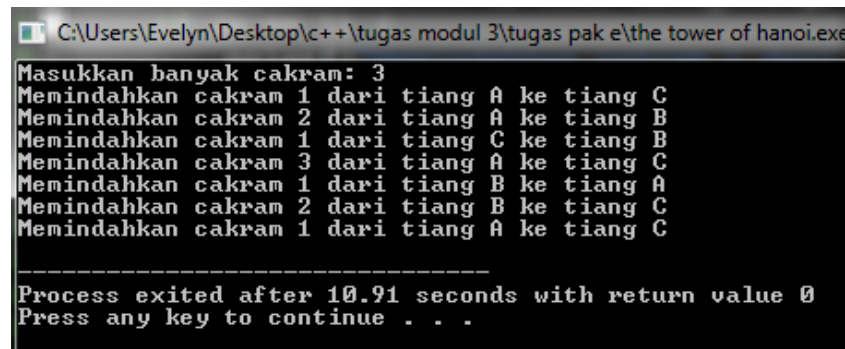


82. Tower of Hanoi

Dari Tugas Ketiga

```
#include<stdio.h>  
//author : Evelyn Tjitrodjojo  
//fungsi untuk penyelesaian tower of hanoi  
void towerOfHanoi(int n, char dari_tiang, char ke_tiang, char tengah_tiang){  
    if (n == 1) {  
        printf("Memindahkan cakram 1 dari tiang %c ke tiang %c\n", dari_tiang, ke_tiang);  
        return;  
    }  
    towerOfHanoi(n-1, dari_tiang, tengah_tiang, ke_tiang);  
    printf("Memindahkan cakram %d dari tiang %c ke tiang %c\n", n, dari_tiang, ke_tiang);  
    towerOfHanoi(n-1, tengah_tiang, ke_tiang, dari_tiang);  
}  
int main(){
```

```
int n; //angka banyak cakram
printf("Masukkan banyak cakram: ");
scanf("%d",&n);
if(n<=0) return 0;
towerOfHanoi(n, 'A', 'C', 'B'); //nama tiang A,B,C
return 0;
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\tugas pak e\the tower of hanoi.exe
Masukkan banyak cakram: 3
Memindahkan cakram 1 dari tiang A ke tiang C
Memindahkan cakram 2 dari tiang A ke tiang B
Memindahkan cakram 1 dari tiang C ke tiang B
Memindahkan cakram 3 dari tiang A ke tiang C
Memindahkan cakram 1 dari tiang B ke tiang A
Memindahkan cakram 2 dari tiang B ke tiang C
Memindahkan cakram 1 dari tiang A ke tiang C
-----
Process exited after 10.91 seconds with return value 0
Press any key to continue . . .
```

83. Rat in Maze

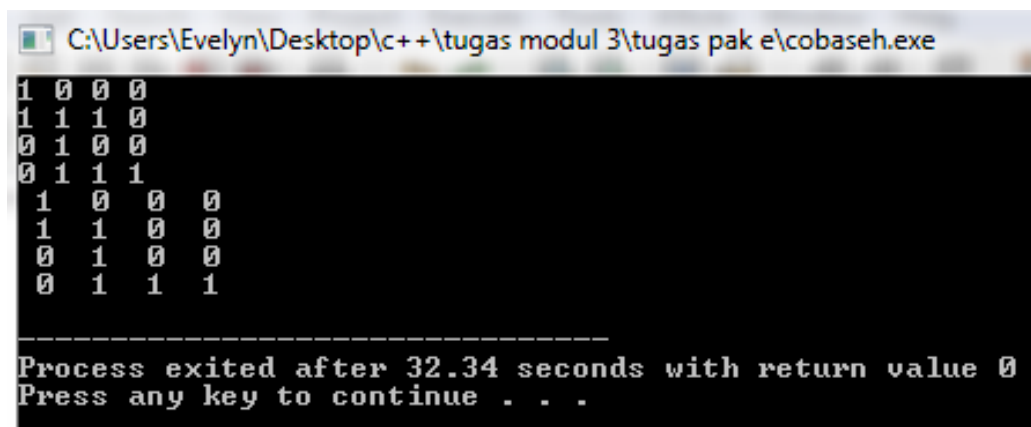
Dari Tugas Ketiga

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
#define N 4 //ukuran maze
int solveMazeUtil(int maze[N][N], int x, int y, int sol[N][N]);
void printSolution(int sol[N][N]){ //untuk print solusi
    int i,j;
    for (i = 0; i < N; i++) {
        for (j = 0; j < N; j++)
            printf(" %d ", sol[i][j]);
        printf("\n");
    }
}
//fungsi untuk memastikan sesuai ukuran maze
int isSafe(int maze[N][N], int x, int y){
    //jika fungsi di dalam batas maze maka langsung return 1
    if(x >= 0 && x < N && y >= 0 && y < N && maze[x][y] == 1)
        return 1;
```

```
//jika fungsi di luar batas maze maka langsung return 0
    return 0;
}
//fungsi maze menggunakan backtracking
int solveMaze(int maze[N][N]){
    int sol[N][N] = { {0, 0, 0, 0},
                      {0, 0, 0, 0},
                      {0, 0, 0, 0},
                      {0, 0, 0, 0}
    };
    if(solveMazeUtil(maze, 0, 0, sol) == 0) {
        printf("Tidak ada solusi, tidak ada jalan.");
        return 0;
    }
    printSolution(sol);
    return 1;
}
//rekursi
int solveMazeUtil(int maze[N][N], int x, int y, int sol[N][N]){
    // jika x, y benar return 1
    if(x == N-1 && y == N-1){
        sol[x][y] = 1;
        return 1;
    }
    //mengecek apakah maze benar ada
    if(isSafe(maze, x, y) == 1){
        //tandai jika benar
        sol[x][y] = 1;
        //jika bisa berpindah ke samping kanan direturn 1
        if (solveMazeUtil(maze, x+1, y, sol) == 1)
            return 1;
        //Jika tidak, pindah ke bawah jika bisa
        if (solveMazeUtil(maze, x, y+1, sol) == 1)
            return 1;
        //jika tidak bisa berpindah, ditandai dengan 0
        sol[x][y] = 0;
    }
}
```

```
        return 0;
    }
    return 0;
}

int main(){
    int maze[N][N];
    int i,j;
    for(i=0;i<N;i++){ //input angka 0 atau 1 sebagai nilai maze 4x4
        for(j=0;j<N;j++){
            scanf("%d",&maze[i][j]);
        }
    }
    solveMaze(maze); //masukkan ke fungsi
    return 0;
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\tugas pak e\cobaseh.exe
1 0 0 0
1 1 1 0
0 1 0 0
0 1 1 1
1 0 0 0
1 1 0 0
0 1 0 0
0 1 1 1
-----
Process exited after 32.34 seconds with return value 0
Press any key to continue . . .
```

84. Bujur Sangkar Ganjil

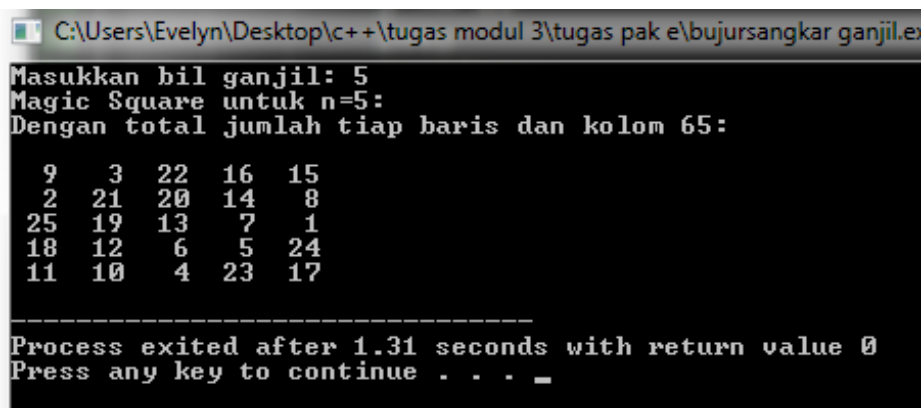
Dari Tugas Ketiga

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
//fungsi bujur sangkar ganjil
void Square(int n){
    int magicSquare[n][n];
    //untuk mengeset semua arr menjadi 0
```

```
memset(magicSquare, 0, sizeof(magicSquare));
//untuk meletakkan angka pertama
int i = n/2;
int j = n-1;
//satu per satu angka diletakkan
int num;
for (num=1; num <= n*n; ){
    if (i== -1 && j==n){ //kondisi ketiga
        j = n-2;
        i = 0;
    }
    else{
        //kondisi pertama jika angka berikutnya
        //keluar dari kotak sisi kanan
        if (j == n) j = 0;

        //kondisi pertama jika angka berikutnya
        //keluar dari kotak sisi atas
        if (i < 0) i=n-1;
    }
    if (magicSquare[i][j]){ //kondisi kedua
        j -= 2;
        i++;
        continue;
    }
    else magicSquare[i][j] = num++; //penambah jumlah
    j++; i--; //kondisi pertama
}
printf("Magic Square untuk n=%d:\nDengan total jumlah "
//print magic square
"tiap baris dan kolom %d:\n\n", n, n*(n*n+1)/2);
for (i=0; i<n; i++){
    for (j=0; j<n; j++) printf("%3d ", magicSquare[i][j]);
    printf("\n");
}
}
```

```
int main() {  
    int n=0;  
    printf("Masukkan bil ganjil: "); //hanya ganjil  
    scanf("%d",&n);  
    if(n%2==0){ //untuk genap  
        printf("Bukan bil ganjil.\n");  
        return 0;  
    }  
    Square (n); //menuju fungsi  
    return 0;  
}
```



The screenshot shows a terminal window with the following text:

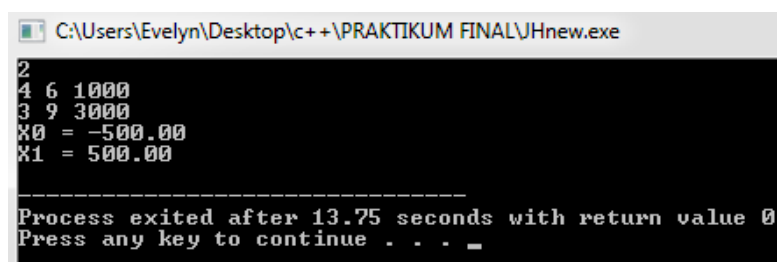
```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\tugas pak e\bujursangkar ganjil.e  
Masukkan bil ganjil: 5  
Magic Square untuk n=5:  
Dengan total jumlah tiap baris dan kolom 65:  
  
  9   3  22  16  15  
  2  21  20  14   8  
 25  19  13   7   1  
 18  12   6   5  24  
 11  10   4  23  17  
  
-----  
Process exited after 1.31 seconds with return value 0  
Press any key to continue . . . _
```

85. Jason yang Haus

Praktikum Final

```
#include<stdio.h>  
  
//author : Evelyn Tjitrodjojo  
//program mencari eliminasi gauss  
  
int main(){  
    int i,j,k,n;  
    float m[20][20],c,x[10];  
    scanf("%d",&n); //input brp persamaan  
    for(i=1; i<=n; i++){  
        for(j=1; j<=(n+1); j++){  
            scanf("%f",&m[i][j]); //input per persamaan  
        }  
    }
```

```
}
for(j=1; j<=n; j++){
    for(i=1; i<=n; i++){
        if(i!=j){ //jika angka i tidak sama dgn j
            c=m[i][j]/m[j][j]; //array i ke j dibagi array j ke j
            for(k=1; k<=n+1; k++){
                m[i][k]=m[i][k]-c*m[j][k]; //kemudian dikurangi hasil kali m
            }
        }
    }
}
for(i=1; i<=n; i++){
    x[i]=m[i][n+1]/m[i][i]; //array x adalah array m ke n+1 dibagi i
    printf("X%d = %.2f\n",i-1,x[i]); //Print hasil
}
return(0);
}
```



C:\Users\Evelyn\Desktop\c++\PRAKTIKUM FINAL\JHnew.exe

```
2
4 6 1000
3 9 3000
X0 = -500.00
X1 = 500.00

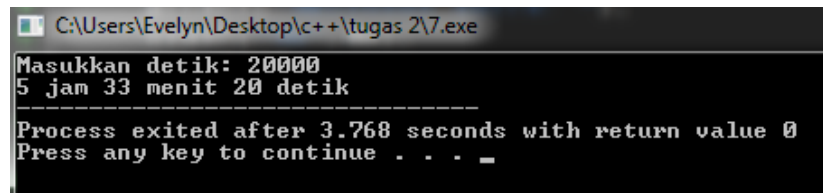
-----
Process exited after 13.75 seconds with return value 0
Press any key to continue . . . _
```

86. Konversi nilai detik yang diinputkan ke jam, menit dan detik yang sesuai

Dari Tugas Kedua

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int a,b,c,x,y,z, sisa;
    printf("Masukkan detik: ");
    scanf("%d",&a); //input angka detik
    x=a/3600; //dibagi 3600 detik agar menjadi jam
```

```
    sisa=a-(x*3600); //sisanya dijadikan menit
    y=sisa/60; //dibagi 60 agar menjadi menit
    z=a-(x*3600)-(y*60); //sisanya dijadikan detik
    printf("%d jam %d menit %d detik",x,y,z); //print jam menit dan detik
    return 0;
}
```

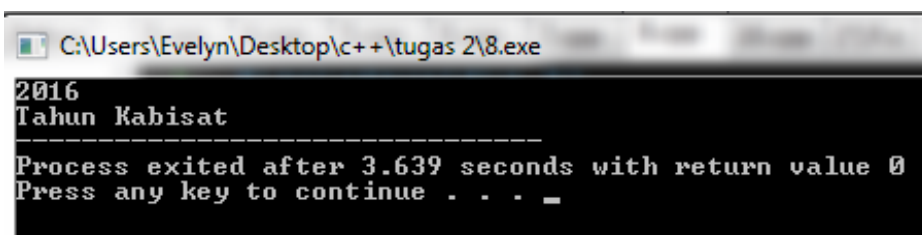


```
C:\Users\Evelyn\Desktop\c++\tugas 2\7.exe
Masukkan detik: 20000
5 jam 33 menit 20 detik
-----
Process exited after 3.768 seconds with return value 0
Press any key to continue . . . _
```

87. Menentukan tahun kabisat atau bukan kabisat

Dari Tugas Kedua

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int a,b,c;
    scanf("%d",&a); //input angka tahun
    if((a%4==0 || a%100==0) && a%400!=0){
        //jika bisa dibagi 4 atau 100 dan tidak bisa dibagi 400
        printf("Tahun Kabisat");
    }
    else //selain itu bukan tahun kabisat
        printf("Bukan tahun kabisat");
    return 0;
}
```

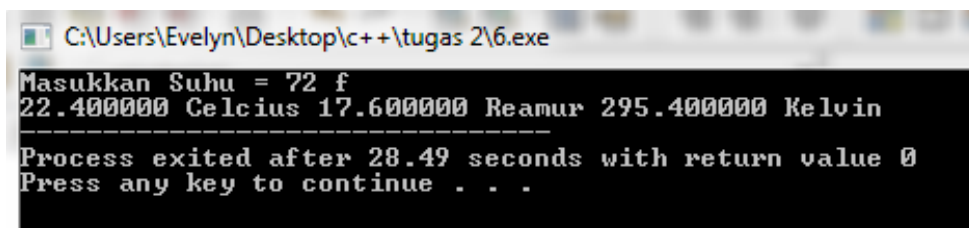


```
C:\Users\Evelyn\Desktop\c++\tugas 2\8.exe
2016
Tahun Kabisat
-----
Process exited after 3.639 seconds with return value 0
Press any key to continue . . . _
```


88. Konversi suhu dari nilai suhu serta kode suhu yang diinputkan (C/R/F/K) ke suhu yang setara dalam C, R, F dan K

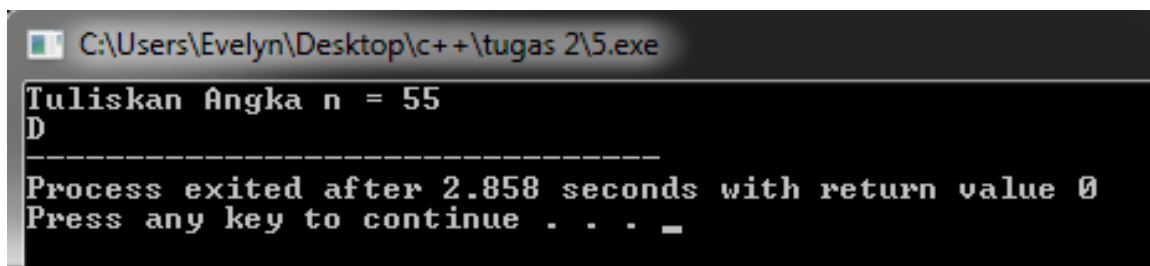
Dari Tugas Kedua

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main () {
    char a;
    float x;
    printf("Masukkan Suhu = ");
    scanf("%f %c", &x, &a); //masukkan suhu dan char tanda suhu
    if(a=='c') //jika dari celcius
        printf("%f Reamur %f Fahrenheit %f Kelvin", 0.8*x, (1.8*x)+32, x+273);
    if(a=='r') //jika dari reamur
        printf("%f Celcius %f Fahrenheit %f Kelvin", 1.25*x, (2.25*x)+32, (1.25*
x)+273);
    if(a=='f') //jika dari fahrenheit
        printf("%lf Celcius %lf Reamur %lf Kelvin", 0.56*(x-32), 0.44*(x-32), (0.
56*(x-32))+273);
    if(a=='k') //jika kelvin
        printf("%lf Celcius %lf Reamur %lf Fahrenheit", x-273, (0.8)*(x-273), (1.
8)*(x-273)+32);
}
```



89. Konversi nilai angka ke nilai huruf A (81-100), AB (71-80), B (66-70), BC (61-65), C (56-60), D (41-55), E (0-40)

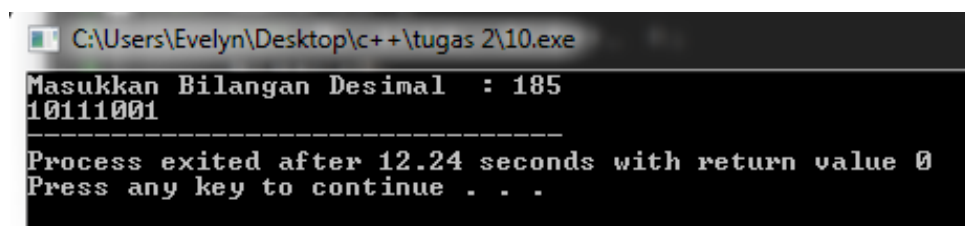
```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main () {
    int n;
    printf("Tuliskan Angka n = ");
    scanf("%d", &n); //input nilai
    //konversi nilai angka ke huruf
    if(n>=81 && n<=100) printf("A");
    else if(n>=71 && n<=80) printf("AB");
    else if(n>=66 && n<=70) printf("B");
    else if(n>=61 && n<=65) printf("BC");
    else if(n>=56 && n<=60) printf("C");
    else if(n>=41 && n<=55) printf("D");
    else if(n>=0 && n<=40) printf("E");
    else printf(".");
}
```



90. Konversikan nilai bilangan desimal ke notasi binernya

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main () {
    int N, sisa, biner=0, i=0;
    printf("Masukkan Bilangan Desimal : ");
```

```
scanf("%d",&N); //input desimal
while (N!=0 && N>0) { //diulang jika bilangan lebih dari nol
    sisa=N%2; //bilangan dimod 2
    N=N/2; //bilangan dibagi 2
    biner=biner+(sisa*i); //biner = sisa hasil modnya dikali i
    i=i*10; //i untuk penanda satuan, puluhan, ratusan dst
}
printf("%d", biner); //print biner
return 0;
}
```



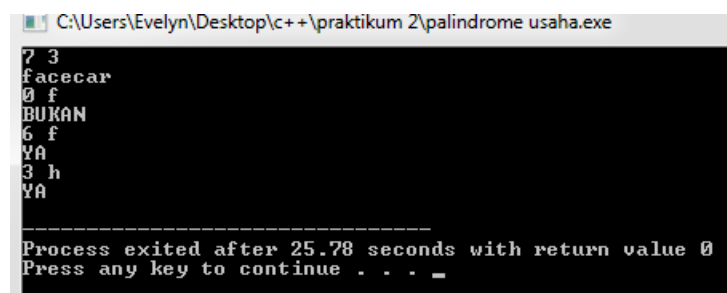
```
C:\Users\Evelyn\Desktop\c++\tugas 2\10.exe
Masukkan Bilangan Desimal : 185
10111001
-----
Process exited after 12.24 seconds with return value 0
Press any key to continue . . .
```

91. Palindrome

Dari Praktikum 2

```
#include<stdio.h>
#include<string.h>
//author : Evelyn Tjitrodjojo
int main(){
    int a,b,c,i,j,k,h,t,g=0;
    char d;
    scanf("%d %d",&a,&b);
    char z[100001];
    scanf("%s",&z);
    t=strlen(z);
    if(t==a){
        h=0;
        for(j=0,k=t-1;j<=((t-1)/2);j++,k--){
            if(z[j]!=z[k]){
                h++;
            }
        }
    }
```

```
    }  
    for(i=0;i<b;i++){  
        scanf("%d %c",&c,&d);  
        if(z[c]!=z[t-c-1]){  
            z[c]=d;  
            if(z[c]==z[t-1-c]){  
                h--;  
            }  
        }  
        else if(z[c]==z[t-c-1]){  
            z[c]=d;  
            if(z[c]!=z[t-1-c]){  
                h++;  
            }  
        }  
        if(h>0) printf("BUKAN\n");  
        else printf("YA\n");  
    }  
    return 0;  
}
```



```
C:\Users\Evelyn\Desktop\c++\praktikum 2\palindrome usaha.exe  
7 3  
facecar  
0 f  
BUKAN  
6 f  
YA  
3 h  
YA  
-----  
Process exited after 25.78 seconds with return value 0  
Press any key to continue . . . _
```

92. Bolak Balik Matrix

Dari Praktikum 2

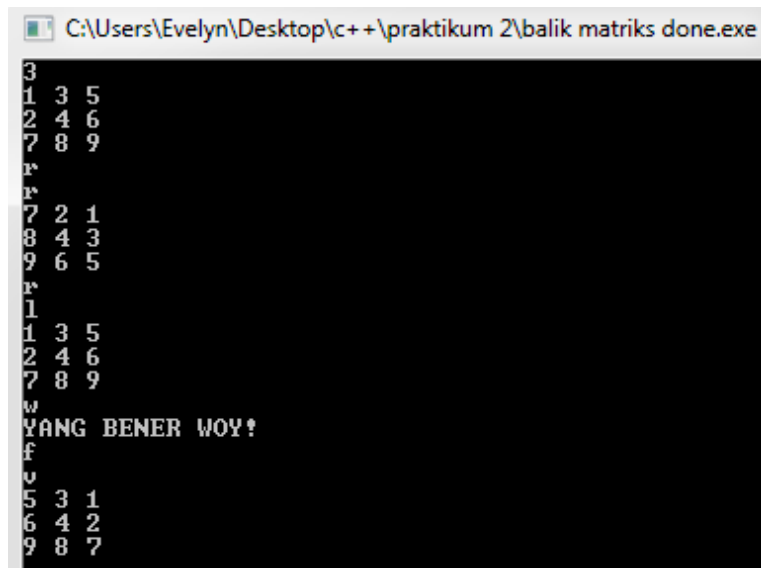
```
#include<stdio.h>  
  
//author : Evelyn Tjitrodjojo  
  
int main(){  
    int n,i,j;
```

```
char r,v,z=0,y=0;
scanf("%d",&n); //input ordo
int x[n][n];
for (i=0;i<n;i++){
    for (j=0;j<n;j++){
        scanf("%d",&x[i][j]); //input angka matriks
    }
}
int m[n][n];
while(y!='z'){
    scanf("\n%c",&y); //input char untuk rotasi (right dan flip
    if(y=='r'){
        scanf("\n%c",&z); //r untuk right
        if(z=='r'){
            for (i=0;i<n;i++){
                for (j=0;j<n;j++){
                    m[i][j]=x[n-j-1][i]; //transpose right
                    printf("%d ",m[i][j]);
                }
                printf("\n");
            }
        }
        else if(z=='l'){ //rotasi ke kiri
            for (i=0;i<n;i++){
                for (j=0;j<n;j++){
                    m[i][j]=x[j][n-i-1];
                    printf("%d ",x[j][n-i-1]);
                }
                printf("\n");
            }
        }
        else if(z=='z') break; //input z untuk break
        else {
            printf("YANG BENER WOY!\n");
        }
    }
}
```

```
        else if(y=='f'){
            scanf("\n%c",&z); //input flip
            if(z=='h'){ //input h untuk horizontal
                for (i=0;i<n;i++){
                    for (j=0;j<n;j++){
                        printf("%d ",x[n-i-1][j]);
                        m[i][j]=x[n-i-1][j];
                    }
                    printf("\n");
                }
            }
            else if(z=='v'){ //input flip vertical
                for (i=0;i<n;i++){
                    for (j=0;j<n;j++){
                        printf("%d ",x[i][n-j-1]);
                        m[i][j]=x[i][n-j-1];
                    }
                    printf("\n");
                }
            }
            else if(z=='z') break; //input z untuk break
            else {
                printf("YANG BENER WOY!\n");
            }
        }
    }
    else if(y=='z') break;
    else {
        printf("YANG BENER WOY!\n");
    }
    for (i=0;i<n;i++){
        for (j=0;j<n;j++){
            x[i][j]=m[i][j];
        }
    }
}
}

return 0;
```

```
}
```

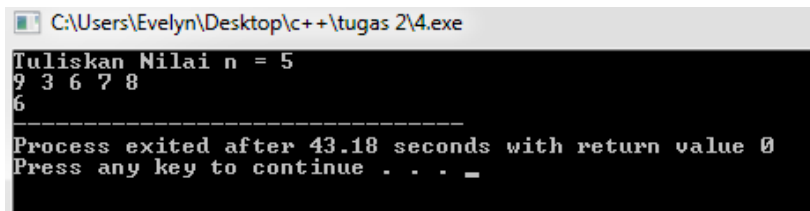


```
C:\Users\Evelyn\Desktop\c++\praktikum 2\balik matriks done.exe
3
1 3 5
2 4 6
7 8 9
r
r
7 2 1
8 4 3
9 6 5
r
1
1 3 5
2 4 6
7 8 9
w
YANG BENER WOY!
f
u
5 3 1
6 4 2
9 8 7
```

93. Menghitung nilai rata-rata dari n buah bilangan yang diinputkan

Dari Tugas Kedua

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main () {
    int n, a, b, c, rata_rata, hasil;
    rata_rata=0;
    printf("Tuliskan Nilai n = ");
    scanf("%d", &n); //input jumlah array
    for(a=0;a<n;a++){
        scanf("%d", &b); //input data array
        rata_rata=rata_rata+b; //jumlah data array
    }
    hasil=rata_rata/n; //jumlah dibagi dengan total array
    printf("%d", hasil); //print rata-rata
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas 2\4.exe
Tuliskan Nilai n = 5
9 3 6 7 8
6
-----
Process exited after 43.18 seconds with return value 0
Press any key to continue . . . _
```

94. Persamaan Kuadrat

```
#include<stdio.h>
#include<math.h>
//author : Evelyn Tjitrodjojo
int main(){
    int a,b,c;
    float x,akar1,akar2;
    printf("Persamaan kuadrat\n");
    printf("a = ");
    scanf("%d",&a); //input a
    printf("\nb = ");
    scanf("%d",&b); //input b
    printf("\nc = ");
    scanf("%d",&c); //input c
    x= b*b-4*a*c;
    if (x>=0){
        akar1 = (-b+sqrt(b*b-4*a*c))/2*a; //menggunakan rumus persamaan kuadrat
        akar2 = (-b-sqrt(b*b-4*a*c))/2*a; //menggunakan rumus persamaan kuadrat
        printf("\nakar 1 = %f\n",akar1); //hasil akar pertama
        printf("akar 2 = %f\n",akar2); //hasil akar kedua
    }

    else{
        printf("angka imajiner"); //selain itu angka imajiner
    }
    return 0;
}
```



```
C:\Users\Evelyn\Desktop\c++\PR 1.exe
Persamaan kuadrat
a = 2
b = 7
c = 5
akar 1 = -4.000000
akar 2 = -10.000000
-----
Process exited after 12.01 seconds with return value 0
Press any key to continue . . . _
```

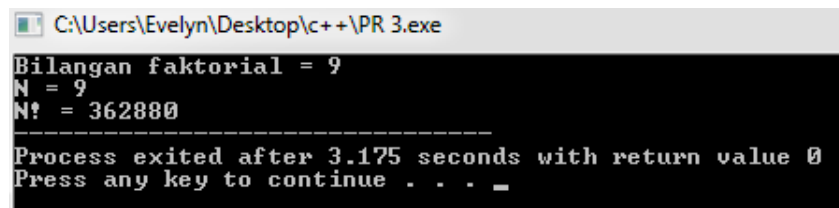
95. Fibonacci

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int a=0,b=1,c,n;
    c=a+b;
    printf("Bilangan Fibonacci\n");
    printf("Masukkan angka: ");
    scanf("%d",&n); //input angka fibonacci
    while(n!=0){
        printf("%d ",b);
        a=b; //swap
        b=c;
        c=a+b; //jumlah a dan b
        n-=1; //n dikurang 1
    }
    return 0;
}
```

```
C:\Users\Evelyn\Desktop\c++\PR 2.exe
Bilangan Fibonacci
Masukkan angka: 8
1 1 2 3 5 8 13 21
-----
Process exited after 4.032 seconds with return value 0
Press any key to continue . . . _
```

96. Bilangan Faktorial

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int result,n,x;
    printf("Bilangan faktorial = ");
    scanf("%d",&n); //input angka yang difaktorial
    x=n;
    result=1;
    while(n>1){
        result=result*n; //angka dikali angka-1
        n--;
    }
    printf("N = %d\n",x); //print angka faktorial
    printf("N! = %d",result); //print hasil
    return 0;
}
```



The screenshot shows a Windows command prompt window titled "C:\Users\Evelyn\Desktop\c++\PR 3.exe". The output of the program is as follows:

```
Bilangan faktorial = 9
N = 9
N! = 362880
-----
Process exited after 3.175 seconds with return value 0
Press any key to continue . . . _
```

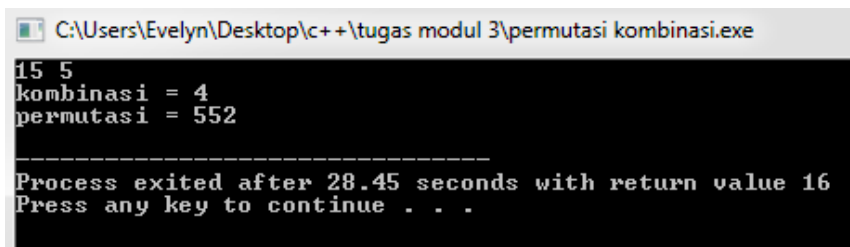
97. Permutasi dan Kombinasi

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int faktorial(int x);
int kombinasi(int x,int y);
int permutasi(int x, int y);
int main(){
    int a,b;
    scanf("%d %d",&a,&b);
    printf("kombinasi = %d\n",kombinasi(a,b));
    printf("permutasi = %d\n",permutasi(a,b));
}
int faktorial(int x){
```

```
    int i,faktorial=1;
    for(i=1;i<=x;i++){
        faktorial=faktorial*i;
    }
    return faktorial;
}

int kombinasi(int x, int y){
    int komb;
    komb=faktorial(x)/(faktorial(x-y)*faktorial(y));
    return komb;
}

int permutasi(int x, int y){
    int permut;
    permut=faktorial(x)/faktorial(x-y);
    return permut;
}
```



```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\permutasi kombinasi.exe
15 5
kombinasi = 4
permutasi = 552

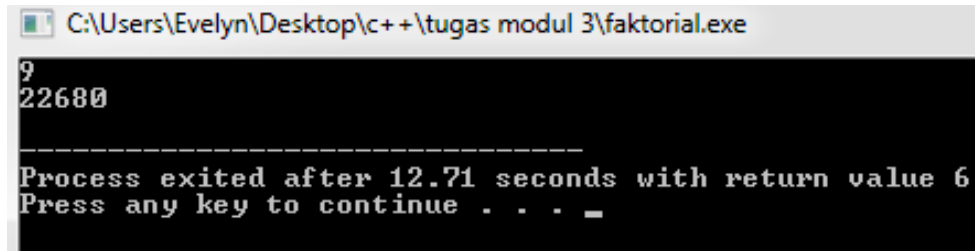
-----
Process exited after 28.45 seconds with return value 16
Press any key to continue . . .
```

98. Faktorial dengan Rekursif

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int faktor(int);
int main(){
    int n;
    scanf("%d",&n); //input angka faktorial
    printf("%d\n",faktor(n)); //print hasil fungsi faktorial
}

int faktor(int a){ //fungsi rekursif faktorial
    if(a==1) return 1; //jika angka=1, langsung print 1
    if(a%2==0){
```

```
        a=(a/2)*faktor(a-1); //bila angka genap maka dikali fungsi faktor
    }
    else
        a*=faktor(a-1); //jika angka dikali angka sebelumnya
return a;
}
```

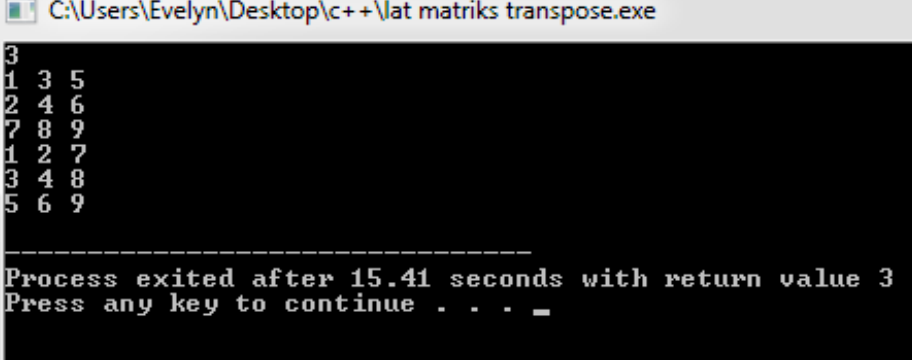


```
C:\Users\Evelyn\Desktop\c++\tugas modul 3\faktorial.exe
9
22680
-----
Process exited after 12.71 seconds with return value 6
Press any key to continue . . . _
```

99. Transpose Matriks

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main () {
    int i, j, t;
    scanf("%d", &t); //input ordo
    int mabok[t][t];
    for (i=0;i<t;i++){
        for(j=0;j<t;j++){
            scanf("%d",&mabok[i][j]); //input isi matriks
        }
        getchar(); //mengambil enter
    }
    for (i=0;i<t;i++){
        for(j=0;j<t;j++){
            if(j<t-1){
                printf("%d ",mabok[j][i]);
                //print matriks transpose dengan spasi
            }
            else
                printf("%d",mabok[j][i]); //print matriks transpose
        }
    }
}
```

```
        printf("\n"); //print enter
    }
}
```



```
3
1 3 5
2 4 6
7 8 9
1 2 7
3 4 8
5 6 9

-----
Process exited after 15.41 seconds with return value 3
Press any key to continue . . . _
```

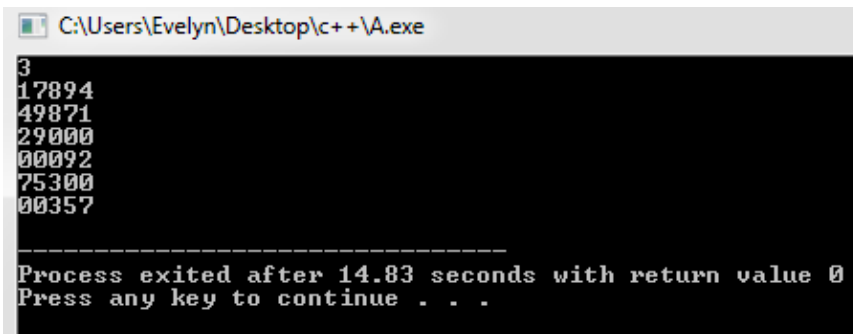
100. Pembalik Angka

```
#include<stdio.h>
//author : Evelyn Tjitrodjojo
int main(){
    int T,N,a,b;
    scanf("%d",&T); //input test case
    for(a=0;a<T;a++){
        scanf("%d",&N); //input angka
        if(N==0){
            printf("%d",N); print angka 0 jika n=0
        }
        else
            while (N>0){
                b=N%10; //di mod 10 untuk mengetahui angka belakang
                N=N/10; //angka dibalik 10
                printf("%d",b); //print pembalik angka
            }

        printf("\n");

    }
    return 0;
}
```

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Tugas 100 codingan



```
C:\Users\Evelyn\Desktop\c++\A.exe
3
17894
49871
29000
00092
75300
00357
-----
Process exited after 14.83 seconds with return value 0
Press any key to continue . . .
```