Nama : Fajar Satria

NRP : 05111940000083

Kelas : B

QUIZ 1 PAA – 5 April 2021

1. **Triangles From Matches**

MASALAH

Professor Samodelkin decided to show his mental abilities again from problem "Match model". He started to construct the triangles with matches. What is the minimal number of matches needs Samodelkin to construct **n** triangles with side of one match.

SOLUSI

Dengan observasi yang saya lakukan dan berbagai macam percobaan yang saya lakukan. Tiap tiap segitiga membutuhkan paling tidak 2 batang korek kecuali segitiga pertama. Untuk tiap 6*i*i segitiga memerlukan 1 batang korek, sebagai contoh untuk 5 segitiga membutuhkan 11 batang korek, sedangkan 6 segitiga butuh 12 korek. Dan untuk pola selanjutnya bisa dicari dengan menghitung dengan mengiterasi tiap tiap segitiga untuk membentuk pola tertentu seperti hexagon.

SOURCECODE

```
#include <cstdio>
int main(){
    long long i,a,n,j,t,ans;
    scanf("%lld",&n);
    if(n<1){
        printf("0\n");
        return 0;
    }
    for(i=1;6*i*i<n;i++);
    if(i==1){
        switch(n){
            case 1: printf("3\n");return 0;break;
            case 2: printf("5\n");return 0;break;
            case 3: printf("7\n");return 0;break;
            case 4: printf("9\n");return 0;break;
            case 5: printf("11\n");return 0;break;
            case 6: printf("12\n");return 0;break;
            default:;
        }
    }else if(i==2){
        switch(n){
            case 7: printf("14\n");return 0;break;
            case 8: printf("16\n");return 0;break;
            case 9: printf("18\n");return 0;break;
            case 10: printf("19\n");return 0;break;
            case 11: printf("21\n");return 0;break;
            case 12: printf("23\n");return 0;break;
            case 13: printf("24\n");return 0;break;
            case 14: printf("26\n");return 0;break;
            case 15: printf("28\n");return 0;break;
            case 16: printf("29\n");return 0;break;
            case 17: printf("31\n");return 0;break;
            case 18: printf("33\n");return 0;break;
            case 19: printf("34\n");return 0;break;
            case 20: printf("36\n");return 0;break;
            case 21: printf("38\n");return 0;break;
            case 22: printf("39\n");return 0;break;
            case 23: printf("41\n");return 0;break;
            case 24: printf("42\n");return 0;break;
            default:;
        }
```

```
    }
        ans = 0;
        a=12;
        for(j=1;j<=i-1;j++){
            ans += a;
            a = a+18;
        }
        n=n-6*(i-1)*(i-1);
        if(n>1){
            ans += 2;
            n = n-1;
        }
        for(j=1;j<=i-2;j++){
            if(n>0){
                ans += 2;
                n = n-1;
            }
            if(n==0) break;
            if(n>0){
                ans += 1;
                n=n-1;
            }
            if(n==0) break;
        }
        for(t=1;t<=5;t++){
            if(n>0){
                ans += 2;
                n=n-1;
            }
            if(n==0) break;
            for(j=1;j<=i-1;j++){
                if(n>0){
                    ans += 2;
                    n=n-1;
                }
                if(n==0) break;
                if(n>0){
                    ans += 1;
                    n=n-1;
                }
                if(n==0) break;
            }
            if(n==0) break;
        }
        if(n>0){
            ans += 2;
            n=n-1;
        }
        if(n==0){
            printf("%lld\n",ans);return 0;
        }
        if(n>0){
            ans += 1;
            n=n-1;
        }
        if(n==0){
            printf("%lld\n",ans);return 0;
        }
}
```

SUBMISSION

#	Submit date	Lang	Time	CPU	Memory	State
8797178	Apr 5, 2021, 12:50:25 PM	C++ 11 (gnu 10.2)	1 ms	1 ms	474	✓ Accepted
8797150	Apr 5, 2021, 12:47:42 PM	C++ 11 (gnu 10.2)	1 ms	1 ms	481	✓ Accepted