Contents

1 Section1

1.1 basic

```
#include <bits/stdc++.h>
using namespace std;
#define ll long long

int main() {

    cout<<"for define \n";
    return 0;
}
```

2 Section2 Math

2.1 GCD

```
#include<iostream>
using namespace std;
int GCD(int x,int y){
    while(y != 0){
        return GCD(y,x%y);
    }
    return x;
}

int main(){
    int a,b;
    cin>>a>>b;
    int gcd = GCD(a,b);
    int lcm = a*b/gcd;

    cout<<"最大公因數為: "<<gcd<<'\n';
    cout<<"最小公倍數為: "<<lcm<<'\n';
    return 0;
}
```

3 Section3 String

3.1 string

```
#include<iostream>
#include<string>
using namespace std;

int main(){
//初始化字串
    string s1 = "",s2 = "";
    long long a;
    int b;

//吃整行(含空格)
    getline(cin,s1);

//compare,assign,串接
    s1 == s2;
    s1 = s2;
    s1 += s2[i];

//字串切割,i:起始位置,len:幾個
    s1 = s1.substr(i,len);

//轉成數字或數字轉字串
    s1 = to_string(a);
    s2 = to_string(b);
    a = stoll(s1);
    b = stoi(s2);

//判斷數字,字母
    isdigit(s1[i]);
    isalpha(s2[i]);
    return 0;
}
```

4 Section4 小工具

4.1 permutation

```
#include<iostream>
#include<algorithm>
using namespace std;

int main(){
    string a = "abc";
    string b = "cba";
    sort(a.begin(),a.end());
    do{
        cout<<a<<"\n";//把更新的字串印出
    }while(next_permutation(a.begin(),a.end()));//產生下一個排

    bool isSamePer =
        is_permutation(a.begin(),a.end(),b.begin());//檢查b字串

    prev_permutation(a.begin(),a.end());//產生上一個排列結果

    return 0;
}
```

5 Section5 Graph

5.1 floyd

```
//N為點的個數，G為記錄路徑長的二維振烈
for(int k=0; k<N; k++){
    for(int i=0; i<N; i++){
        for(int j=0; j<N; j++){
            G[i][j]=min(G[i][j],G[i][k]+G[k][j]);
        }
    }
}
```

5.2 Dijkstra

```
struct Data{
    int u,w;
    bool operator<(const Data&rhs) const
    {
        return w>rhs.w;
    }
};

void sol(int s){
    memset(d,0x3f,sizeof(d));
    memset(vis,0,sizeof(vis));
    d[s] = 0;
    priority_queue<Data> pq;
    pq.push(Data{s,0});

    while(!pq.empty()){
        Data k = pq.top();
        pq.pop();
        int u = k.u;
        if(vis[u]) continue;
        vis[u] = 1;

        for(int i=0; i<G[u].size(); i++){
            int v = G[u][i].first, w = G[u][i].second;
            if(d[v]>d[u]+w){
                d[v] = d[u] + w;
                pq.push(Data{v,d[v]});
            }
        }
    }
}
```

6 Java

6.1 java biginterger

```
import java.io.*;
import java.util.*;
import java.math.BigInteger;

public class bigint {
    public static void main(String args[]) {
        Scanner cin = new Scanner(System.in);
//Java大數運算宣告BigInteger
    //首先宣告plus代表做加法運算
        BigInteger plus = BigInteger.valueOf(0);
    //首先宣告minus代表做減法運算
        BigInteger minus = BigInteger.valueOf(0);
        while ( cin.hasNext() ) {
    //接下來讀入一整行字串
            String str = cin.next();
        //宣告num代表讀入進來的一整行數字
        //然後把str丟到BigInteger num裡面
            BigInteger num = new BigInteger(str);
            if ( str.equals("0") ) break;
            else {
                plus = plus.add(num);
                minus = minus.subtract(num);
            }
        }
        System.out.print("The plus sum is " + plus + "\n");
        System.out.print("The minus sum is " + minus + "\n");
    }
}
```

7 數學公式

7.1 thm

- 中文測試
- $\sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6}$