```c
#include<stdio.h>
#include<math.h>
#include<stdlib.h>
void nhap(FILE *f, int n , int m, float *a, float *b);
float tinh(int n, float *a, int d1);
void Hieu(float*a,float *b,int n,float *c, int m);
int main(){
    FILE*f;
    float *a,*b, *c;float p,q;
    int n,m, d1,d2;
    f= fopen("input.txt", "r");
    fscanf(f,"%d %d", &n,&m);
    // cap phat bo nho
    a=(float*)malloc((n+1)*sizeof(int));
    b=(float*)calloc(m+1,sizeof(int));
    nhap(f,n,m,a,b);
    fclose(f);
    scanf ("%d%d",&d1,&d2);
    f=fopen("output.txt","w");
    printf ( "px / qx = %f",tinh(n,a,d1)/tinh(m,b,d2));
    fprintf (f, "px / qx = %f",tinh(n,a,d1)/tinh(m,b,d2));
    fclose(f);
    Hieu(a,b,n,c,m);
}
void nhap(FILE *f, int n , int m, float *a, float *b){
    for (int i=0;i<=n; i++) fscanf(f,"%f", a+i);
    for (int i =0;i<=m;i++) fscanf(f,"%f" , b+i);
}
float tinh(int n, float *a, int d1){
```

```
}
float tinh(int n, float *a, int d1){
    float p =0;
    for(int i=0;i<=n;i++) {
        p=p+a[i]*pow(d1,i);
    }
return p;
}
void Hieu(float*a,float *b,int n,float *c, int m)
{   int k,i;
    if(n>m) {
       k=n;
       for(i=0;i<=m;i++){
          c[i]=a[i]-b[i];}

       for(i=m+1;i<=n;i++) c[i]=a[i];
    }else{
       k=m;
       for(i=0;i<=n;i++){
          c[i]=b[i]-a[i];}
       for(i=n+1;i<=m;i++) c[i]=-b[i];
       }
       for(i =0 ;i<= k;i++){
       printf ( " %d " , c[i]);}}

```

```c
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
//  bai 2
void nhap(FILE *f, float *a, int m, int n,int N);
void xuat(float *a, int m, int n,int N) ;
void xuattep(FILE *f1,float *a, int m, int n,int N);
float trungbc(float *a, int m, int n,int N );
float timamdau(float *a, int m, int n,int N);
void ammax(float *a, int m, int n,int N);
void ammaxfile(FILE *f1,float *a, int m, int n,int N);
void tichhangvamin(float *a, int m, int n,int N);
void filetichhangvamin(FILE *f1,float *a, int m, int n,int N);
int countduong(float *a, int m, int n,int N);

int main() {
    FILE *f, *f1;
    f= fopen ("matran.txt","r");
    int m, n;
    float **a;
    fscanf(f,"%d %d\n",&m,&n);
    a = (float **)malloc(m *sizeof(int *));
    for (int j=0 ; j<n ; j++){
        a[j]= (float *)malloc (n *sizeof(int));
    }
    nhap(f, *a, m, n, 50);
    fclose(f);
```

```
25      }
26      nhap(f, *a, m, n, 50);
27      fclose(f);
28      xuat(*a,m,n, 50);
29      f1= fopen ("xuatmatran.txt","w");
30      xuattep(f1,*a,m,n, 50);
31      printf ( "trung binh cong cac so am cua ma tran la %0.5f",trungbc(*a, m,n,50) );
32      fprintf (f1, "trung binh cong cac so am cua ma tran la %0.5f",trungbc(*a, m,n,50) );
33      timamdau(*a,m,n,50);
34      ammax( *a,m, n,50);
35      fprintf (f1,"\nphan tu am dau tien cua ma tran la %f",timamdau(*a,m,n,50));
36      ammaxfile(f1,*a, m,n,50);
37      tichhangvamin(*a, m,  n, 50);
38      filetichhangvamin(f1, *a, m,  n,50);
39      printf ("so phan tu duong cua ma tran la %d",countduong(*a,m, n,50));
40      public int __cdecl printf (const char * __restrict__ _Format, ...)ntduong(*a,m, n,50));
41      fclose(f1);
42      free (a);
43  }
44  void nhap(FILE *f, float *a, int m, int n,int N){
45      for (int i=0; i<m;i++){
46          for (int j=0 ; j<n ; j++){
47              fscanf (f,"%f  ", a+i*N+j);
48          }
49      }
50  }
```

```
}
void xuat(float *a, int m, int n,int N){
    printf ("ma tran vua nhap la :\n");
    printf ("%d %d\n",m,n);
    for (int i=0; i<m;i++){
        for (int j=0 ; j<n ; j++){
            printf ("%1.f ", *(a+i*N+j));
        }
        printf ("\n");
    }
}
void xuattep(FILE *f1,float *a, int m, int n,int N){
    fprintf (f1,"%d %d\n",m,n);
    for (int i=0; i<m;i++){
        for (int j=0 ; j<n ; j++){
            fprintf (f1,"%1.f ", *(a+i*N+j));
        }
        fprintf (f1,"\n");
    }
}
float trungbc(float *a, int m, int n,int N ){
    float sum = 0;
    int count = 0;
    for (int i=0; i<m;i++){
        for (int j=0 ; j<n ; j++){
            if ( *(a+i*N+j) < 0){
                sum +=*(a+i*N+j);
```

```
74          for (int j=0 ; j<n ; j++){
75              if ( *(a+i*N+j) < 0){
76                  sum +=*(a+i*N+j);
77                  count ++;
78              }
79          }
80      }return sum/count;
81  }
82  float timamdau(float *a, int m, int n,int N){
83      for (int i=0; i<m;i++){
84          for (int j=0 ; j<n ; j++){
85              if ( *(a+i*N+j) < 0) return *(a+i*N+j);
86          }
87      }
88  }
89  void ammax(float *a, int m, int n,int N){
90      float max = timamdau(a,m,n,50);
91      int luui,luuj;
92      for (int i=0; i<m;i++){
93          for (int j=0 ; j<n ; j++){
94              if ( *(a+i*N+j) < 0 && *(a+i*N+j) > max){
95                  max = *(a+i*N+j); luui = i; luuj = j;
96              }
97          }
98      }
99      printf ("\n gia tri am lon nhat la a[%d][%d] = %.1f",luui,luuj,max);
100 }
```

```
}
void ammaxfile(FILE *f1,float *a, int m, int n,int N){
    float max = timamdau(a,m,n,50);
    int luui,luuj;
    for (int i=0; i<m;i++){
        for (int j=0 ; j<n ; j++){
            if ( *(a+i*N+j) < 0 && *(a+i*N+j) > max){
                max = *(a+i*N+j); luui = i; luuj = j;
            }
        }
    }
    fprintf (f1,"\n gia tri am lon nhat la a[%d][%d] = %.1f",luui,luuj,max);
}
void tichhangvamin(float *a, int m, int n,int N){
    int count = 0;
    float t[50];
    for (int i=0; i<m;i++){
        t[i] = 1;
        for (int j=0 ; j<n ; j++){
            t[i] *= *(a+i*N+j);
        }
        printf ("\ntich hang thu %d la %.1f ",count, t[i]);
        count ++;
    }
    float min = t[0]; int k;
    for (int i=0; i<m;i++){
        for (int j=0 ; j<n ; j++){
```

```
        for (int j=0 ; j<n ; j++){
            if ( min > t[i]){
                min =  t[i];
                k=i;
            }
        }
    }
    for (int i=0; i<m;i++){
        if ( min == t[i]) printf("\ntich min la cua hang thu %d = %.1f\n", k, min);
    }
}
void filetichhangvamin(FILE *f1,float *a, int m, int n,int N){
    int count = 0;
    float t[50];
    for (int i=0; i<m;i++){
        t[i] = 1;
        for (int j=0 ; j<n ; j++){
            t[i] *= *(a+i*N+j);
        }
        fprintf (f1,"\ntich hang thu %d la %.1f ",count, t[i]);
        count ++;
    }
    float min = t[0]; int k;
    for (int i=0; i<m;i++){
        for (int j=0 ; j<n ; j++){
```

```
147         }
148         float min = t[0]; int k;
149         for (int i=0; i<m;i++){
150             for (int j=0 ; j<n ; j++){
151                 if ( min > t[i]){
152                     min =  t[i];
153                     k=i;
154                 }
155             }
156         }
157         for (int i=0; i<m;i++){
158             if ( min == t[i]) fprintf(f1,"\ntich min la cua hang thu %d = %.1f\n", k, min);
159         }
160     }
161     int countduong(float *a, int m, int n,int N){
162         int count = 0;
163         for (int i=0; i<m;i++){
164             for (int j=0 ; j<n ; j++){
165                 if (*(a+i*N+j) > 0 ) count ++;
166             }
167         }
168         return count;
169     }
```

```c
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
//  bai 1.3
void nhap(FILE *f, float *x, float *y, int n);
void xuat( float *x, float *y, int n);
void xuatfile( FILE *f1,float *x, float *y, int n);
void khoangcach(float *x, float *y, int n);
void filekhoangcach(FILE *f1,float *x, float *y, int n);
void doanainhat(float *x, float *y, int n);
void filedoanainhat(FILE *f1,float *x, float *y, int n);

int main () {
    FILE *f,*f1;
    f = fopen( "toado.txt", "r");
    float *x,*y; int n;
    fscanf(f,"%d\n",&n);
    x = (float *)malloc((n+1) *sizeof(int ));
    y = (float *)malloc((n+1) *sizeof(int ));
    nhap(f, x, y,n);
    fclose(f);
    xuat( x, y, n);
    f1=fopen ("xuattoado.txt","w");
    xuatfile( f1,x,y,n);
    khoangcach(x, y, n);
    filekhoangcach(f1,x,y,n);
    doanainhat(x, y,n);
```

```
    filekhoangcach(f1,x,y,n);
    doanainhat(x, y,n);
    filedoanainhat(f1,x,y,n);
    fclose(f1);
    free(x);
    free(y);
}
void nhap(FILE *f, float *x, float *y, int n){
    for (int i =0;i<n;i++){
        fscanf ( f, "(%f,%f)\n", &x[i],&y[i]);
    }
}
void xuat( float *x, float *y, int n){
    printf ( "ma tran cua nhap la :\n");
    printf ( "%d\n",n);
    for (int i =0;i<n;i++){
        printf ("(%.0f,%.0f)\n", x[i],y[i]);
    }
}
void xuatfile( FILE *f1,float *x, float *y, int n){
    fprintf ( f1,"ma tran cua nhap la : \n");
    fprintf ( f1,"%d\n",n);
    for (int i =0;i<n;i++){
        fprintf (f1,"(%.0f,%.0f)\n", x[i],y[i]);
    }
}
```

```
51  }
52  void khoangcach(float *x, float *y, int n){
53      float d;
54      printf (" khoang cach cac diem den truc hoanh la :\n");
55      for (int i =0;i<n;i++){
56          d = abs(y[i]);
57          printf ("d((x[%d],y[%d])) = %.3f\n", i,i,d);
58      }
59  }
60  void filekhoangcach(FILE *f1,float *x, float *y, int n){
61      float d;
62      fprintf (f1," khoang cach cac diem den truc hoanh la :\n");
63      for (int i =0;i<n;i++){
64          d = abs(y[i]);
65          fprintf (f1,"d((x[%d],y[%d])) = %.1f\n", i,i,d);
66      }
67  }
68  void doanainhat(float *x, float *y, int n){
69      float s[50][50];
70      float max = s[0][0];
71      int a,b;
72      for (int i =0;i<n-1;i++){
73          for (int j =i+1;j<n;j++){
74              s[i][j] = sqrt(pow(x[i]-x[j],2)+pow(y[i]-y[j],2));
75          }
76      }
```

```
    }
    for (int i =0;i<n-1;i++){
        for (int j =i+1;j<n;j++){
            if (s[i][j] > max){
                max = s[i][j];
                a=i; b=j;
            }
        }
    }
    printf ( "\n do dai doan thang dai nhat giua n diem la x[%d]y[%d] --> x[%d]y[%d] = %.f", a,a,b,b,max);
}
```

```
84      }
85      printf ( "\n do dai doan thang dai nhat giua n diem la x[%d]y[%d] --> x[%d]y[%d] = %.f", a,a,b,b,max);
86  }
87  void filedoanainhat(FILE *f1,float *x, float *y, int n){
88      float s[50][50];
89      float max = s[0][0];
90      int a,b;
91      for (int i =0;i<n-1;i++){
92          for (int j =i+1;j<n;j++){
93              s[i][j] = sqrt(pow(x[i]-x[j],2)+pow(y[i]-y[j],2));
94          }
95      }
96      for (int i =0;i<n-1;i++){
97          for (int j =i+1;j<n;j++){
98              if (s[i][j] > max){
99                  max = s[i][j];
100                 a=i; b=j;
101             }
102         }
103     }
104     fprintf (f1, "\n do dai doan thang dai nhat giua n diem la x[%d]y[%d] --> x[%d]y[%d] = %.f", a,a,b,b,max);
105 }
```

```c
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
//  bai 1.4 hinh chu nhat
void nhap(FILE *f, float *x, float *y, int n);
void xuat( float *x, float *y, int n);
void xuatfile(FILE *f1, float *x, float *y, int n);
float dientichtb(float *x, float *y, int n);
void timsmax(float *x, float *y, int n);
void filetimsmax(FILE *f1,float *x, float *y, int n);

int main () {
    FILE *f,*f1;
    f = fopen( "chunhat.txt", "r");
    float *x,*y; int n;
    fscanf(f,"%d\n",&n);
    x = (float *)malloc((n+1) *sizeof(int ));
    y = (float *)malloc((n+1) *sizeof(int ));
    nhap(f, x, y,n);
    fclose(f);
    f1 = fopen( "xuatchunhat.txt", "w");
    xuat( x, y, n);
    xuatfile(f1,x,y,n);
    printf ("\ndien tich trung binh cua cac hcn la %.3f",dientichtb(x, y, n));
    fprintf(f1,"\ndien tich trung binh cua cac hcn la %.3f",dientichtb(x, y, n));
    timsmax(x, y, n);
```

```c
    fprintf(f1,"\ndien tich trung binh cua cac hcn la %.3f",dientichtb(x, y, n));
    timsmax(x, y, n);
    filetimsmax(f1,x,y,n);
    fclose(f1);
    free(x);
    free(y);
}
void nhap(FILE *f, float *x, float *y, int n){
    for (int i =0;i<n;i++){
        fscanf ( f, "%f,%f\n", &x[i],&y[i]);
    }
}
void xuat( float *x, float *y, int n){
    printf ( "cac hinh chu nhat vua nhap la :\n");
    printf ( "%d\n",n);
    for (int i =0;i<n;i++){
        printf ("%.1f,%.1f\n", x[i],y[i]);
    }
}
void xuatfile(FILE *f1, float *x, float *y, int n){
    fprintf (f1, "cac hinh chu nhat vua nhap la :\n");
    fprintf (f1, "%d\n",n);
    for (int i =0;i<n;i++){
        fprintf (f1,"%.1f,%.1f\n", x[i],y[i]);
    }
}
```

```
51  float dientichtb(float *x, float *y, int n){
52      float s= 0;
53      for (int i =0;i<n;i++){
54          s += x[i]*y[i];
55      }
56      return s/n;
57  }
58  void timsmax(float *x, float *y, int n) {
59      float max = x[0]*y[0];
60      int a;
61      float b,c;
62      for (int i =0;i<n;i++){
63          if ( x[i]*y[i] > max  ) {
64              max = x[i]*y[i];
65              a = i;
66              b = x[i];
67              c = y[i];
68          }
69      }
70      printf ("\n\nhcn co dien tich max la hing thu %d co kich thuoc %.1f,%.1f la %.2f ", a,b,c,max);
71  }
```

```
    }
    printf ("\n\nhcn co dien tich max la hing thu %d co kich thuoc %.1f,%.1f la %.2f ", a,b,c,max);
}
void filetimsmax(FILE *f1,float *x, float *y, int n) {
    float max = x[0]*y[0];
    int a;
    float b,c;
    for (int i =0;i<n;i++){
        if ( x[i]*y[i] > max  ) {
            max = x[i]*y[i];
            a = i;
            b = x[i];
            c = y[i];
        }
    }
    fprintf (f1,"\n\nhcn co dien tich max la hinh thu %d co kich thuoc %.1f,%.1f la %.2f ", a,b,c,max);
}
```

```
public int __cdecl fprintf (FILE * __restrict__ _File, const char * __restrict__ _Format, ...)
```

```c
#include <stdio.h>
#include <conio.h>
#include <stdlib.h>
 #include<string.h>
 // bai 2 trang 129 laptrinhnangcao
struct hanghoa {
    char tenhang[30];
    int soluong;
    char loaihang[30];
};

typedef hanghoa HH;
void nhap(HH a[], int n){
   for(int i = 1; i<= n; ++i){
    printf("\nNhap HH thu %d:", i);
    printf("\nNhap ten hang : "); fflush(stdin); gets(a[i].tenhang);
    printf("Nhap loai hang: "); gets(a[i].loaihang);
    printf("Nhap so luong hang: "); scanf("%d", &a[i].soluong);
    }
}
void xuat(char *tenFile,HH a[], int n){
    FILE* f = fopen("hanghoa.txt", "wt");
    for(int i = 1;i <= n;i++){
        struct hanghoa HH = a[i];
        fprintf(f,"\nNhap HH thu %d:", i);
        fprintf(f,"\nten hang : %s", a[i].tenhang);fflush(stdin);
        fprintf(f,"\nloai hang : %s", a[i].loaihang);
```

```
25          fprintf(f,"\nNhap HH thu %d:", i);
26          fprintf(f,"\nten hang : %s", a[i].tenhang);fflush(stdin);
27          fprintf(f,"\nloai hang : %s", a[i].loaihang);
28          fprintf(f,"\nso luong hang : %d", a[i].soluong);
29      }fclose (f);
30  }
31
32  void xuatN( HH a[], int n){
33      for(int i = 1;i <= n;i++){
34          printf("\nhang hoa thu %d:", i);
35          printf("\nten hang : %s", a[i].tenhang);fflush(stdin);
36          printf("\nloai hang : %s", a[i].loaihang);
37          printf("\nso luong hang : %d", a[i].soluong);;
38      }
39  }
40  void timhanghoa(char *ten,HH a[], int n){
41      int found = 0;
42      printf (" ten hang hoa can tim la ");
43      fflush(stdin); gets(ten);
44      for(int i=1; i<=n; ++i){
45          if(strcmp(a[i].tenhang,ten)==0) {
46              xuatN(a,n);
47              found = 1;
48          }
49          if ( found == 0) printf ( " khong tim thay hang hoa");}
50  }
```