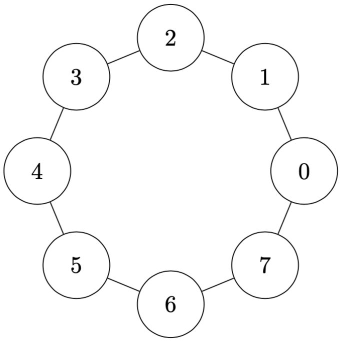
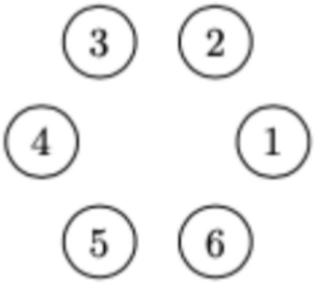
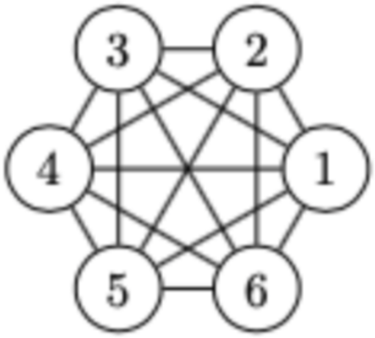
$Chapter3 : TestingResults$

> the `nodes` of the graph represent the fruits, and the `edges` represent the conflicts between the fruits.
> The `price` of each node is a random integer between 0 and 999

		
input1 **(cyclic connected graph)**	Input2 **(non-connected graph)**	input3 **(non-connected graph)**

> our test cases include:

- `input0.txt` : the sample input in the PTA problem description
- `input1.txt` : a cyclic graph with 100 nodes (cyclic connected graph)
- `input2.txt` : a graph with 100 nodes and no edges (non-connected graph)
- `input3.txt` : a graph with 100 nodes all nodes connected to each other (non-connected graph)
- `input4.txt` : a random graph with 50 nodes and 50 edges (random graph)
- `input5.txt` : a graph with 0 nodes and 0 edges (empty graph)

we use the following code to generate the test cases:

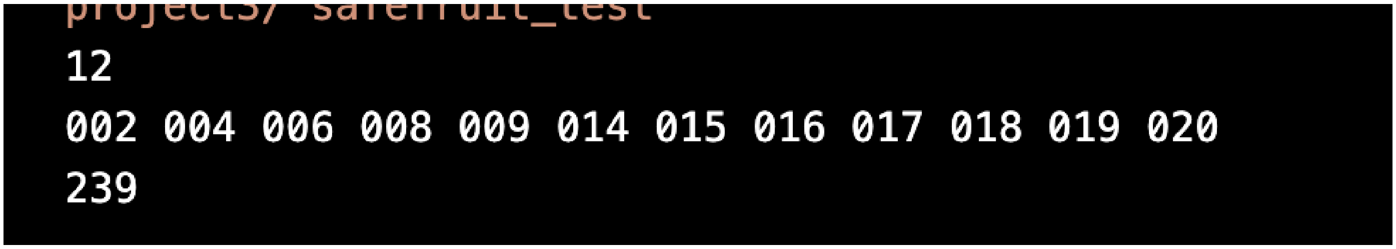
```c
#include<stdio.h>
#include<stdlib.h>
#include<time.h>
#include<string.h>

#define MAXN 100

int main(){
    int i, j, N, M;
    char input[30];
//  case 1: --------------------------------------------------
    sprintf(input, "input1.txt");
    FILE* data = fopen(input, "w");
    M = 100;
    N = M;
    fprintf(data, "%d %d\n", N, M);

    for(i = 0; i < N - 1; i ++) {
        fprintf(data,"%.3d %.3d\n", i + 1, i + 2);
    }
    fprintf(data,"%.3d 001\n", N);

    // price
    srand((unsigned)time(NULL));
    for(i = 0; i < M; i ++) {
        int k=rand()%1000;
        fprintf(data,"%.3d %d\n", i + 1, k);
    }
    fclose(data);

 //case 2: --------------------------------------------------
    sprintf(input, "input2.txt");
    data = fopen(input, "w");
    M = 100;
    N = 0;
    fprintf(data, "%d %d\n", N, M);
    // price
    srand((unsigned)time(NULL));
    for(i = 0; i < M; i ++) {
        int k=rand()%1000;
        fprintf(data,"%.3d %d\n", i + 1, k);
    }
    fclose(data);
```

```
//case 3: --------------------------------------------------
    sprintf(input, "input3.txt");
    data = fopen(input, "w");
    M = 100;
    N = M*(M-1)/2;
    fprintf(data, "%d %d\n", N, M);
    // conflict
    for(i = 0; i < M; i ++) {
        for(j = i+1; j < M; j ++) {
            fprintf(data,"%.3d %.3d\n", i + 1, j + 1);
        }
    }
    // price
    srand((unsigned)time(NULL));
    for(i = 0; i < M; i ++) {
        int k=rand()%1000;
        fprintf(data,"%.3d %d\n", i + 1, k);
    }
    fclose(data);

 //case 4: --------------------------------------------------

    sprintf(input, "input4.txt");
    data = fopen(input, "w");
    M = 50;
    N = M ;
    fprintf(data, "%d %d\n", N, M);
    // conflict
    srand((unsigned)time(NULL));
    int n1[MAXN],n2[MAXN];
    for(i = 0; i < N; i ++) {
        int a = rand() % M + 1;
        int b = rand() % M + 1;
        if(a == b) continue;
        n1[i] = a;
        n2[i] = b;

        //garantee the connection is not duplicated
        for(j = 0;j < i;j ++)
            if(a == n1[j] && b == n2[j]) {
                i--;break;
            }
        fprintf(data,"%.3d %.3d\n", a, b);
    }
    // price
    srand((unsigned)time(NULL));
    for(i = 0; i < M; i ++) {
        int k=rand()%1000;
        fprintf(data,"%.3d %d\n", i + 1, k);
    }
    fclose(data);

//case 5: ------------------------------------------------
    sprintf(input, "input5.txt");
    data = fopen(input, "w");
    M = 0;
    N = 0;
    fprintf(data, "%d %d\n", N, M);
    fclose(data);
    return 0;
}
```

Test Results

The test datas are in the `input_0.txt` ...... in the `code` folder.
Here are the results of the test cases:

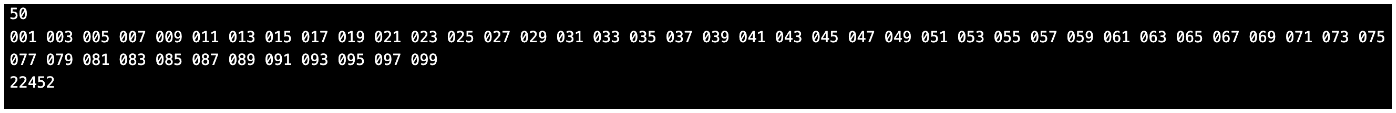
- `input0.txt` : the sample input in the PTA problem description



```
project3/ safefruit_test
12
002 004 006 008 009 014 015 016 017 018 019 020
239
```

the result is same as the sample output

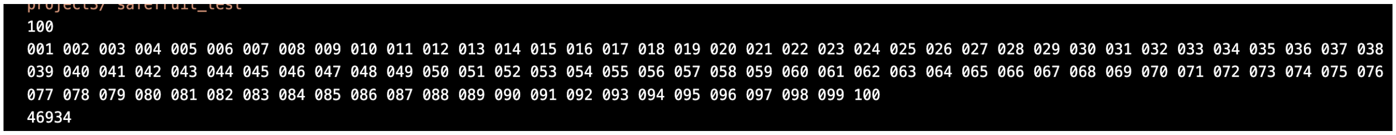
- `input1.txt` : a cyclic graph with 100 nodes (cyclic connected graph)



```
50
001 003 005 007 009 011 013 015 017 019 021 023 025 027 029 031 033 035 037 039 041 043 045 047 049 051 053 055 057 059 061 063 065 067 069 071 073 075
077 079 081 083 085 087 089 091 093 095 097 099
22452
```

the result is correct

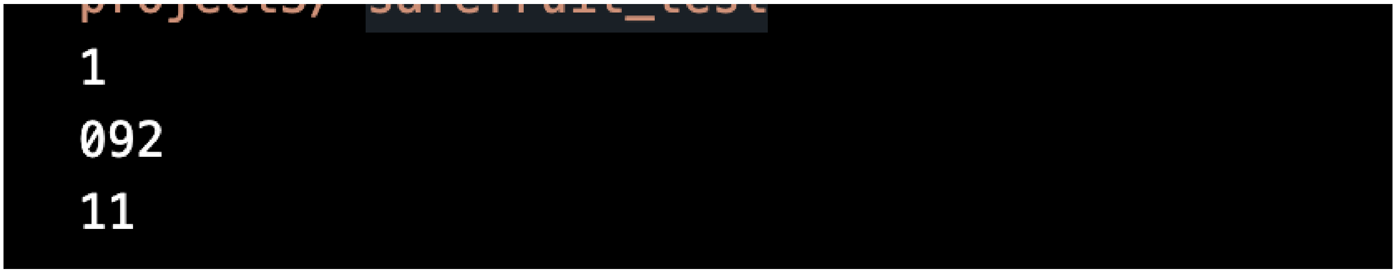
- `input2.txt` : a graph with 100 nodes and no edges (non-connected graph)



```
projects/ safefruit_test
100
001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017 018 019 020 021 022 023 024 025 026 027 028 029 030 031 032 033 034 035 036 037 038
039 040 041 042 043 044 045 046 047 048 049 050 051 052 053 054 055 056 057 058 059 060 061 062 063 064 065 066 067 068 069 070 071 072 073 074 075 076
077 078 079 080 081 082 083 084 085 086 087 088 089 090 091 092 093 094 095 096 097 098 099 100
46934
```

the result is correct

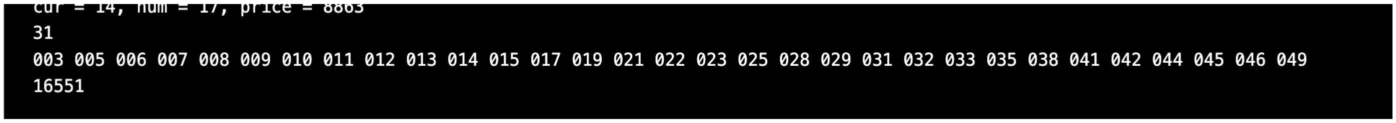
- `input3.txt` : a graph with 100 nodes all nodes connected to each other (complete graph)



```
projects/ safefruit_test
1
092
11
```

the result is correct

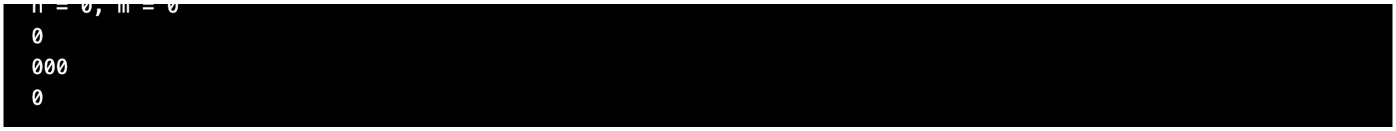
- `input4.txt` : a random graph with 50 nodes and 50 edges (random graph)



```
cur = 14, num = 17, price = 8863
31
003 005 006 007 008 009 010 011 012 013 014 015 017 019 021 022 023 025 028 029 031 032 033 035 038 041 042 044 045 046 049
16551
```

the result is correct

- `input5.txt` : a graph with 0 nodes and 0 edges (empty graph)



```
n = 0, m = 0
0
000
0
```

the result is correct

Conclusion & Analysis

Declaration

We hereby declare that all the work done in this project titled "Dijkstra Sequence" is of our independent effort.