5.STL

1、一维vector的使用

```
vector<int> vec;
vec.push_back(1);
vec.pop_back();
for(int i = 0; i < vec.size(); i++) ……
vec[1] = 3;
```

2、vector的高级用法

```
struct Student
{
  string name;
  int age;
};
vector<Student> class1;
Student stu1,stu2;
stu1.name = "xiaohong";
stu1.age = 12;
class1.push_back(stu1);
```

3、构造函数

```
vector<int> vec(n,1);   //长度为n，全是1
vector<int> vec(n);   //长度为n，全是0
```

4、二维vector的使用

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

int main()
{
    vector<vector<int>> v2d;
    for (int i = 0; i < 5; i++)
    {
        v2d.push_back(vector<int>());
    }
    for (int i = 0; i < v2d.size(); i++)
    {
        for (int j = 0; j <= i; j++)
```

```
15          {
16              v2d[i].push_back((i+1)*(j+1));
17          }
18      }
19      for (int i = 0; i < v2d.size();i++)
20      {
21          for (int j = 0; j < v2d[i].size(); j++)
22          {
23              cout << i+1 << "*" << j+1 << "=" <<v2d[i][j] << " ";
24          }
25          cout << endl;
26      }
27      return 0;
28  }
```

2、set

```
1   set<string> country;
2   country.insert("China");      //注意如果集合中已经存在了某个元素，
3   //再次插入不会重复出现
4
5   if(country.count("China")) …… //判断元素是否存在
6
7   for (set<string>::iterator it = country.begin(); it != country.end(); it++)
8   //遍历
9
```

3、set基础使用

```
1   #include <iostream>
2   #include <set>
3   using namespace std;
4
5   int main()
6   {
7       set<string> country;
8       country.insert("China");
9       country.insert("America");
10      country.insert("France");
11      set<string>:: iterator it;
12      for ( it = country.begin(); it != country.end(); it++)
13      {
14          cout << *it << " ";
15      }
16      cout << endl;
17      country.erase("America");
18      country.erase("England");
19      if (country.count("China"))
20      {
21          cout << "China in country." <<endl;
```

```
22          }
23      country.clear();
24      return 0;
25  }
```

4、map

5、映射表

6、打印锯齿矩阵

```cpp
1   #include <iostream>
2   #include <vector>
3   using namespace std;
4   vector<int> mat[10005];
5   int main()
6   {
7       int n,m,x,y;
8       cin >> n >> m;
9       for (int i = 0; i < m; i++)
10      {
11          cin >>x >>y;
12          mat[x].push_back(y);
13      }
14      for (int i = 1; i<=n;i++)
15      {
16          for (int j = 0; j <mat[i].size();j++)
17          {
18              if (j != mat[i].size()-1)
19              {
20                  cout <<mat[i][j] << " " ;
21              }
22              else
23              {
24                  cout <<mat[i][j];
25              }
26          }
27          cout <<endl;
28      }
29      return 0;
30  }
```

6、蒜头君破案?

```cpp
1   #include <iostream>
2   #include <set>
3   using namespace std;
4   struct people
5   {
6       int h;
```

```cpp
    int w;
    int age;
    people(int _h, int _w, int _age)
    {
        h = _h;
        w = _w;
        age = _age;
    }
    bool operator<(const people &rhs) const{
      if(h != rhs.h)
          return h < rhs.h;
      if( w != rhs.w)
          return w < rhs.w;
      return age < rhs.age;
    }
};
set<people> s;

int main()
{
    int n,m,h,w,age ;
    cin >>n >>m;
    for (int i = 0; i < n; i++)
    {
        cin >> h >> w >>age;
        s.insert(people(h,w,age));
    }
    for (int i = 0; i <m; i++)
    {
        cin >> h >>w >>age;
        if (s.count(people(h,w,age)))
        {
            cout <<"yes" <<endl;
        }
        else
        {
            cout <<"no" <<endl;
        }
    }
    return 0;
}
```

7、蒜头君的藏书?

```cpp
main.cpp
 1  #include <iostream>
 2  #include <map>
 3  #include <string>
 4  #include <cstdio>
 5  using namespace std;
 6  map<string, int> mp;
 7  char name[105];
 8  int main() {
 9      int n;
10      scanf("%d", &n);
11      for (int i = 0; i < n; i++) {
12          scanf("%s", name);
13          mp[name]++;
14      }
15      printf("%d\n", mp.size());
16      for (map<string, int>::iterator it = mp.begin(); it != mp.end(); it++) {
17          printf("%s %d\n", (it -> first).c_str(), it -> second);
18      }
19      return 0;
```

8、堆积木

```cpp
 1  #include <iostream>
 2  #include <vector>
 3  using namespace std;
 4  vector<int> v[10005];
 5  int main()
 6  {
 7      int n, m,a,b;
 8      scanf("%d%d",&n,&m);
 9      for (int i = 1; i<=n;i++)
10      {
11          v[i].push_back(i);
12      }
13      for (int i = 0; i <m; i++)
14      {
15          scanf("%d%d",&a,&b);
16          if (a== b)
17              continue;
18          for (int j = 0; j < v[b].size();j++)
19          {
20              v[a].push_back(v[b][j]);
21          }
22          vector<int>().swap(v[b]);
23      }
24      for(int i = 1; i<=n; i++)
25      {
26          for (int j = 0; j <v[i].size();j++)
27          {
28              printf("%d",v[i][j]);
29          }
30      }
31      return 0;
32  }
```