

## hashmap.cm

```
/*  
  
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    )  
  
*/  
  
// Copyright (c) 1994  
// Hewlett–Packard Company  
// Copyright (c) 1996  
// Silicon Graphics Computer Systems, Inc.  
// Copyright (c) 2009 Alexander Stepanov and Paul McJones  
  
using System;  
using System.Concepts;  
  
namespace System.Collections  
{  
    public class HashMap<K, T, H = Hasher<K>, C = EqualTo<K>> where K is  
        Semiregular and T is Semiregular and HashFunction<H, K> and C is  
        Relation and C.Domain is K  
    {  
        public typedef K KeyType;  
        public typedef T MappedType;  
        public typedef Pair<KeyType, MappedType> ValueType;  
        public typedef H HashFun;  
        public typedef C Compare;  
        public typedef HashMap<KeyType, MappedType, HashFun, Compare>  
            Self;  
        public typedef Hashtable<KeyType, ValueType, SelectFirst<KeyType,  
            MappedType>, HashFun, Compare> TableType;  
        public typedef TableType.ConstIterator ConstIterator;  
        public typedef TableType.Iterator Iterator;  
  
        public nothrow Iterator Begin()  
        {  
            return table.Begin();  
        }  
        public nothrow ConstIterator Begin() const  
        {  
            return table.CBegin();  
        }  
        public nothrow ConstIterator CBegin() const  
        {  
            return table.CBegin();  
        }  
    }  
}
```

```

}
public nothrow Iterator End()
{
    return table.End();
}
public nothrow ConstIterator End() const
{
    return table.CEnd();
}
public nothrow ConstIterator CEnd() const
{
    return table.CEnd();
}
public nothrow inline int Count() const
{
    return table.Count();
}
public nothrow inline bool IsEmpty() const
{
    return table.IsEmpty();
}
public nothrow void Clear()
{
    table.Clear();
}
public nothrow Iterator Find(const KeyType& key)
{
    return table.Find(key);
}
public nothrow ConstIterator Find(const KeyType& key) const
{
    return table.CFind(key);
}
public nothrow ConstIterator CFind(const KeyType& key) const
{
    return table.CFind(key);
}
public MappedType& operator [] (const KeyType& key)
{
    Pair<Iterator, bool> ib = Insert(ValueType(key, MappedType())
    );
    Iterator i = ib.first;
    return i->second;
}
public Pair<Iterator, bool> Insert(const ValueType& value)
{
    return table.Insert(value);
}
public nothrow void Remove(const KeyType& key)
{
    table.Remove(key);
}
public nothrow void Remove(Iterator pos)

```

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    {
        table.Remove(pos);
    }
    private TableType table;
}

public nothrow bool operator==(K, T, H, C)(const HashMap<K, T, H, C>&
    left, const HashMap<K, T, H, C>& right) where K is Semiregular
    and T is Semiregular and HashFunction<H, K> and C is Relation and
    C.Domain is K
{
    if (left.Count() != right.Count()) return false;
    for (const Pair<K, T>& p : left)
    {
        HashMap<K, T, H, C>.ConstIterator i = right.Find(p.first);
        if (i == right.End()) return false;
        if (i->second != p.second) return false;
    }
    return true;
}
}

```