

向量

位图：数据结构

02-G1

这样做能保存的信息量就小多了，不到原来的万分之一，但他们也只能接受这个结果。

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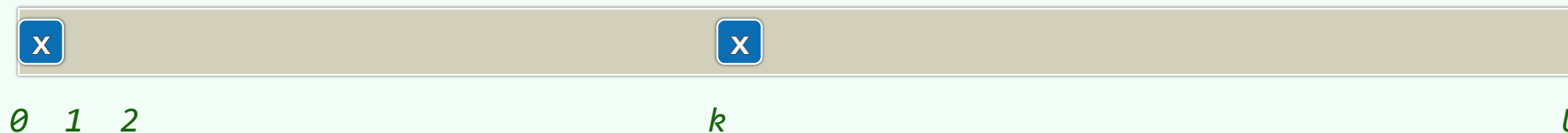
有限整数集

$\forall 0 \leq k < U :$

$k \in S ?$ `bool test(int k);`

$S \cup \{k\}$ `void set(int k);`

$S \setminus \{k\}$ `void clear(int k);`



结构

```
class Bitmap {
```

```
private:
```

```
    unsigned char * M;
```

```
    Rank N, _sz;
```

```
public:
```

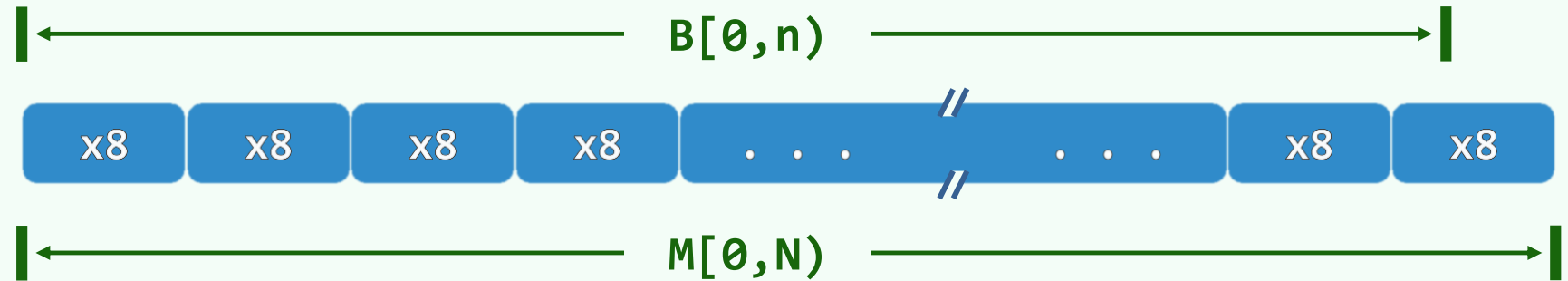
```
    Bitmap( Rank n = 8 )
```

```
    { M = new unsigned char[ N = (n+7)/8 ]; memset( M, 0, N ); _sz = 0; }
```

```
    ~Bitmap() { delete [] M; M = NULL; _sz = 0; }
```

```
    void set( int k ); void clear( int k ); bool test( int k );
```

```
};
```



实现

```
bool test ( int k ) { expand( k ); return M[ k >> 3 ] & ( 0x80 >> (k & 0x07) ); }
```

```
void set ( int k ) { expand( k ); _sz++; M[ k >> 3 ] |= ( 0x80 >> (k & 0x07) ); }
```

```
void clear( int k ) { expand( k ); _sz--; M[ k >> 3 ] &= ~( 0x80 >> (k & 0x07) ); }
```

