

向量

位图：数据结构

$\theta_2 - G_1$

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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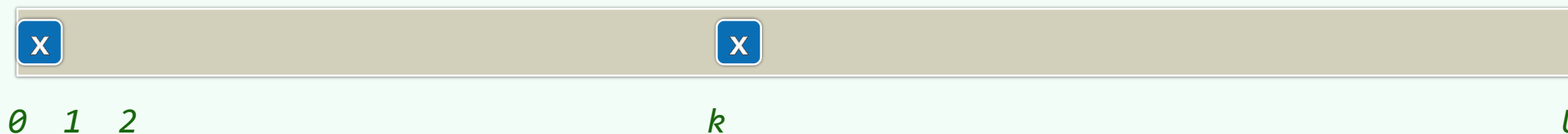
# 有限整数集

$\forall 0 \leq k < U :$

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

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

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



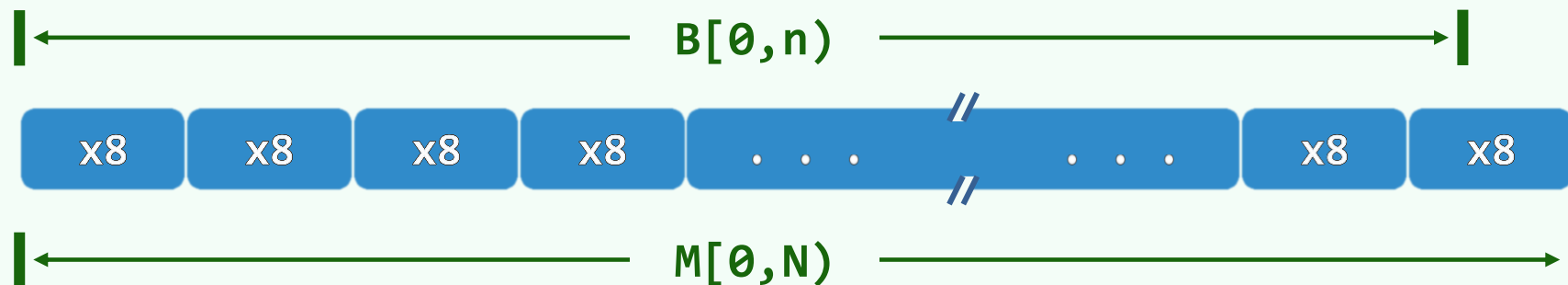
# 结构

```
class Bitmap {
```

```
private:
```

```
    int N;
```

```
    unsigned char * M;
```



```
public:
```

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

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

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

```
};
```

# 实现

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

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

```
void clear( int k ) { expand( k ); M[  $k \gg 3$  ] &= ~(  $0x80 \gg (k \& 0x07)$  ); }
```

