

Loop Body: Find Value, or Adjust One Bound

```
while (high >= low) {
    mid = low + (high - low) / 2;
    if (value == array[mid]) {
        return mid; // Found!
    }
    if (value < array[mid]) {
        high = mid - 1;
    } else {
        low = mid + 1;
    }
}
```

Can Use Arrays of Arrays for Multidimensional Data

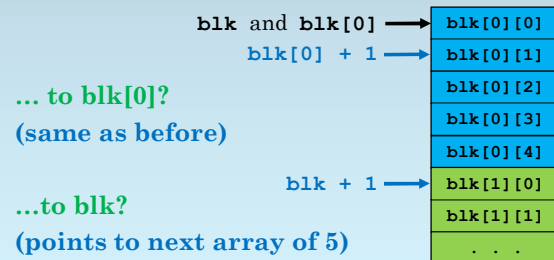
One can create arrays of arrays. For example,
`int32_t blk[3][5];`
 allocates an array of 3 arrays of 5 `int32_ts`.

The expressions `blk` and `blk[0]`

- have the same value
- but `blk[0]` has type `int32_t*`
- while `blk` has type `int32_t (*) [5]`
- (pointer to an array of 5 `int32_ts`)

Remember: Pointer Arithmetic Depends on Size

What happens when we add 1...



Often Need to Map Multidimensional Data by Hand

You will use multidimensional arrays in MP6.

In later MPs,

- array dimensions are not known in advance,
- so your program must
- perform the mapping into 1D.

For example, in MP8,

- an **image** is **height** × **width** pixels,
- but **height** and **width** are variables.