University of Illinois at Urbana-Champaign
Dept. of Electrical and Computer Engineering

ECE 220: Computer Systems & Programming

Arrays

Arrays are Groups of Values Named Using an Index

In MP4,
◦ you have to handle four regions
◦ with sizes given as **r1**, **r2**, **r3**, and **r4**.

In some larger nonograms, a row
or column may have 20 regions.

So for MP6 …

… let's talk about arrays!

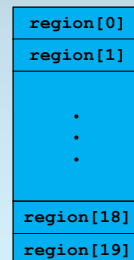(Instead of **r1**, **r2**, … , **r20**.)

Arrays are Contiguous in Memory; Indices Use Brackets

In **C**, one declares an array of 20 **int**s as

```
int region[20];
```

The compiler **allocates memory**
◦ **to hold 20 ints**
◦ called **region[0]**
  through region[19],
◦ as illustrated to the right.

region[0]
region[1]
.
.
.
region[18]
region[19]

Pointer Arithmetic Moves Among Array Elements

```
int region[20];
```

The expression **region**
◦ **has type int***
◦ and **points to region[0]**.

The expression **region + N**
◦ **points to region[N]**
◦ (called **pointer arithmetic**).

region ⟶ region[0]
region[1]
.
.
.
region[18]
region + 19 ⟶ region[19]