

ESc 101: FUNDAMENTALS OF COMPUTING

Lecture 23

Feb 24, 2010

OUTLINE

1 MORE ON ARRAYS

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- Consider `int A[SIZE][SIZE]` declaration.
- As observed, this declares `SIZE+1` pointers: `A`, `A[0]`, ..., `A[SIZE-1]`.
- `A[i]` points to the element `A[i][0]`.
- `A` also points to the element `A[0][0]`.
- `A[0]`, ..., `A[SIZE-1]` can be viewed as an array of pointers.
- In that case, `A` should point to `A[0]`!

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- However, there is no need to store the address of $A[0]$ as we **never** change the contents of $A[0]$.
- So the treatment of A is a little inconsistent:
 - ▶ It points to $A[0][0]$.
 - ▶ It also “behaves” as pointer to $A[0]$, in that $*A$ is the same as $A[0]$.
 - ▶ Which, of course, means that both A and $*A$ are addresses of $A[0][0]$!
- Since $*(A[0])$ is the location $A[0][0]$ and $*A$ is same as $A[0]$, $**A$ is also the location $A[0][0]$.
- Similarly, $*(A+1)$ is same as $A[1]$, $*(A+2)$ is same as $A[2]$ as so on.

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- Then pointer arithmetic as above has no inconsistency.
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