Arrays and iteration

EECS 211

Winter 2019

Initial code setup

```
$ cd eecs211
$ curl $URL211/lec/04array.tgz | tar zx
…
$ cd 04pointer
```

Review: variables, objects, values

```
  int main()
  {
▶     int a = 5, b = 10;
      a = 12;
  }
```

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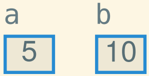

- Variables name objects, which contain values

Review: variables, objects, values

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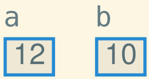

- Variables name objects, which contain values
- Assignment changes the value in an object

Arrays are indexable, aggregate objects

```
 int main()
 {
►    double a[5];
     a[0] = 1.5;
     a[2] = 3 * a[0];
     --a[0];
 }
```

Arrays are indexable, aggregate objects

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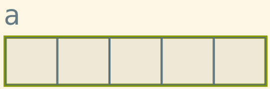

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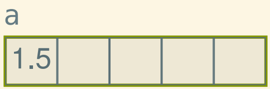

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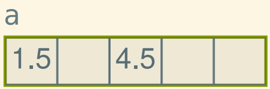

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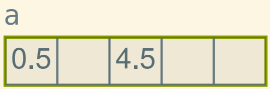

– To the terminal! –

The meaning of `while`

```
while (⟨cond⟩) ⟨body⟩
```

means

```
if (⟨cond⟩) {
    ⟨body⟩
    if (⟨cond⟩) {
        ⟨body⟩
        if (⟨cond⟩) {
            ⟨body⟩
            ...
        }
    }
}
```

The meaning of `while`, using `goto`

```
while (⟨cond⟩) ⟨body⟩
```

means

```
start:
    if (!⟨cond⟩) goto finish;
    ⟨body⟩
    goto start;

finish:
```

The meaning of `for`

```
for (⟨init⟩; ⟨cond⟩; ⟨step⟩) ⟨body⟩
```

means

```
{
    ⟨init⟩;
    while (⟨cond⟩) {
        ⟨body⟩
        ⟨step⟩;
    }
}
```

Idiomatic counting using `for`

```
for (size_t i = 0; i < limit; ++i) {
    ... i ...
}
```

Idiomatic counting using `for`

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Note:

- We are counting up to `limit - 1`

Idiomatic counting using `for`

```
for (size_t i = 0; i < limit; ++i) {
    ... i ...
}
```

Note:

- We are counting up to `limit - 1`
- This is useful because the last element of an array of size n is at index `n - 1`