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Questions

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problem

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Consider this class's rep:

```java
public class Building {
    private final String buildingName;
    private int numberOfFloors;
    private final int[] occupancyPerFloor;
    private final List<String> companyNames = Collections.synchronizedList(new ArrayList<>());
    ...
}
```

Which of these variables use a threadsafe data type?

- [x] buildingName
- [x] numberOfFloors
- [ ] occupancyPerFloor
- [x] companyNames

✔

Explanation
String and int are both immutable, so the types themselves are threadsafe.
int[] is mutable, and not threadsafe.
List<String> is not automatically threadsafe, but the implementation of List<String> used here is a synchronized list wrapper, and companyNames is final so it can never be assigned to a different List, so this type is threadsafe.

Which of these variables are safe for use by multiple threads?

- [x] buildingName
- [ ] numberOfFloors
- [ ] occupancyPerFloor
- [x] companyNames

✔

Explanation
Not only does the variable's type have to be threadsafe, but the variable itself should be final. buildingName and companyNames satisfy that, but reads and writes of numberOfFloors may have race conditions.

Which of these variables cannot be involved in any race condition?

- [x] buildingName
- [ ] numberOfFloors
- [ ] occupancyPerFloor

☐ companyNames

✔

Explanation

buildingName is immutable, so it can't be involved in any race condition.

companyNames might still be involved in a race condition caused by (otherwise safe) mutations to the list, e.g.

if (companyNames.size() > 0) { String firstCompany = companyNames.get(0); }

If another thread could empty the companyNames list between the size check and the get call, then this code will fail.

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