

Homework 2 (due 2/27/2002)

Consider the following serializer code:

```
serializer
{ queue a, b, c;
  crowd cr;
  int i = 0; /* initially zero */

  void foo() {
    enqueue(a) until i != 0;
    join_crowd(cr) {
      ... /* critical section */
    }
  }

  void bar() {
    enqueue(b) until a.empty() && i == 0;
    join_crowd(cr) {
      ... /* critical section */
    }
    i = 1;
  }

  void baz() {
    enqueue(c) until i == 1;
    join_crowd(cr) {
      ... /* critical section */
    }
    i = 0;
  }
} // end of serializer
```

Which of the following path expression(s) describe(s) only executions for which the above serializer does **not** deadlock?

1. **path** { foo + bar + baz } + bar **end**
2. **path** { bar ; foo ; baz } **end**
3. **path** { baz + foo } + bar **end**
4. **path** bar ; { foo } ; baz **end**
5. **path** { bar ; baz } ; foo **end**