Test and Assessment - Print View

Dynamic Deadlock Prediction

Date: Thu Jun 6 16:45:58 2024 Maximum Points: 12

Question 1 [ID: 1059311]

```
   T1     T2
1. acq(y)
2. acq(x)
3. rel(x)
4. rel(y)
5.         acq(x)
6.         acq(y)
7.         rel(y)
8.         rel(x)
```

☑ A deadlock can be derived from the trace.
 (Checked = 1 Point, Unchecked = 0 Points)
☐ A data race can be derived from the trace.
 (Checked = 0 Points, Unchecked = 1 Point)
☐ Neither a deadlock nor a data race can be derived from the
 trace.
 (Checked = 0 Points, Unchecked = 1 Point)

Question 2 [ID: 1059313]

```
   T1     T2
1. acq(y)
2. acq(x)
3. rel(x)
4. rel(y)
5.         acq(y)
6.         acq(x)
7.         rel(x)
8.         rel(y)
```

Consider the trace above. Select the statements that apply.

☐ A deadlock can be derived from the trace.
 (Checked = 0 Points, Unchecked = 1 Point)
☐ A data race can be derived from the trace.
 (Checked = 0 Points, Unchecked = 1 Point)
☑ Neither a deadlock nor a data race can be derived from the trace. *(Checked = 1 Point, Unchecked = 0
 Points)*

Question 3 [ID: 1059315]

```
   T1     T2
1. acq(y)
2. acq(x)
3. rel(x)
4. rel(y)
5.         acq(x)
6.         acq(z)
7.         rel(z)
8.         rel(x)
```

Consider the trace above. What does the lock graph look like?

○
```
y -> x
  y -> x
```
(0 Points)

○
```
y -> z
  x -> z
```
(0 Points)

◉
```
y -> x
  x -> z
```
(1 Point)

Question 4 [ID: 1059317]

```
     T1    T2    T3
1.   acq(x)
2.   acq(y)
3.   rel(y)
4.   rel(x)
5.         acq(y)
6.         acq(z)
7.         rel(z)
8.         rel(y)
9.               acq(z)
10.              acq(x)
11.              rel(x)
12.              rel(z)
```

Consider the trace above. The lock graph is as follows:

```
x -> y
y -> z
z -> x
```

What can be derived from this lock graph?

○ There is no deadlock.
(0 Points)

◉ There is a deadlock
possible.
(1 Point)

○ The lock graph is wrong.
(0 Points)

Question 5 [ID: 1059319]

```
     T1    T2
1.   acq(x)
2.   acq(y)
3.   acq(z)
4.   rel(z)
5.   rel(y)
6.   rel(x)
7.         acq(z)
8.         acq(x)
9.         rel(x)
10.        rel(z)
```

Consider the trace above. What does its lock graph look like?

○

```
x -> y
x -> z
y -> z
z -> x
```

(1 Point)

○

```
x -> y
y -> z
```

(0 Points)

○

```
x -> z
z -> x
```

(0 Points)

Question 6 [ID: 1059321]

```
    T1    T2
1.  acq(x)
2.  acq(y)
3.  acq(z)
4.  rel(z)
5.  rel(y)
6.  rel(x)
7.         acq(z)
8.         acq(x)
9.         acq(x)
10.        rel(z)
```

Consider the trace above. Which statement holds?

○ There is no trace reordering that shows a
deadlock.
(0 Points)

◉ There is a trace reordering that shows a deadlock.
(1 Point)

○ No trace reordering is possible.
(0 Points)

Question 7 [ID: 1059323]

```
    T1    T2
1.  acq(x)
2.  acq(y)
3.  acq(z)
4.  rel(z)
5.  rel(y)
6.  rel(x)
7.         acq(x)
8.         acq(z)
9.         acq(y)
10.        rel(y)
11.        rel(z)
12.        rel(x)
```

Consider the trace above. Its lock graph is as follows:

```
x -> y
x -> z
y -> z
x -> z
x -> y
z -> y
```

What can be derived from this lock graph?

◉ A deadlock is possible.
(1 Point)

○ There are no deadlocks.
(0 Points)

○ The lock graph is
wrong.
(0 Points)

Question 8 [ID: 1059325]

```
     T1      T2
1.  acq(x)
2.  acq(y)
3.  acq(z)
4.  rel(z)
5.  rel(y)
6.  rel(x)
7.          acq(x)
8.          acq(z)
9.          acq(y)
10.         rel(y)
11.         rel(z)
12.         rel(x)
```

Consider the trace above. Which statement holds?

◉ There is no trace reordering that shows a
deadlock.
(1 Point)

○ There is a trace reordering that shows a deadlock.
(0 Points)

○ No trace reordering is possible.
(0 Points)