## 

Assignment 4

Software Engineering II

Spring 2017

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## Question

### 1

a b a.a b.b  
S1 0 1 00 11  
S2 1 1 11 10  
S3 0 0 01 01

a.a is a distinguishing sequence

### 2

State 1: r.a.a  
State 2: r.a  
State 3: r.b

### 3

W1: a.b/01  
W2: b/1  
W3: a/0

W = {a.b, a, b}

P = { , a, b, b.a, b.b, b.b.a, b.b.b }

(P.W) =   
{ r.a, r.b, r.a.b, r.a.a, r.a.a.b, r.b.b,   
 r.b.a, r.b.a.b, r.b.a.a, r.b.a.a.b,   
 r.b.b.a, r.b.b.b, r.b.b.a.b, r.b.b.a.a,  
 r.b.b.a.a.b, r.b.b.b.a,  
 r.b.b.b.b, r.b.b.b.a.b }

### 4

Distinguishing sequence a.a:  
From state 1: 00  
From state 2: 11  
From state 3: 00

UIO sequences:  
State 1 r.a.a: 00  
State 2 r.a: 0  
State 3 r.b: 1

W test sequences:  
r.a: 0  
r.b: 1  
r.a.b: 01  
r.a.a: 00  
r.a.a.b: 001  
r.b.b: 11  
r.b.a: 11  
r.b.a.b: 111  
r.b.a.a: 111  
r.b.a.a.b: 1111  
r.b.b.a: 110  
r.b.b.b: 110  
r.b.b.a.b: 1100  
r.b.b.a.a: 1100  
r.b.b.a.a.b: 11000  
r.b.b.b.a: 1100  
r.b.b.b.b: 1101  
r.b.b.b.a.b: 11001

### 5

We can see that for the DS, when applied to the implementation, it is no longer a DS, so the implementation seems to be incorrect.

The UIO sequences are the same for the implementation and the specification

For W, r.b.b.a.b gives different outputs for the specification and the implementation. Specification says output should be 1101, but the implementation gives 1100.  
Same with r.b.b.a.a and r.b.b.a.a.b.