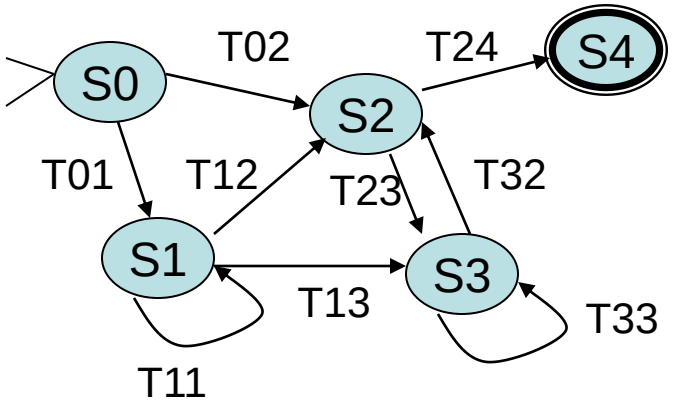
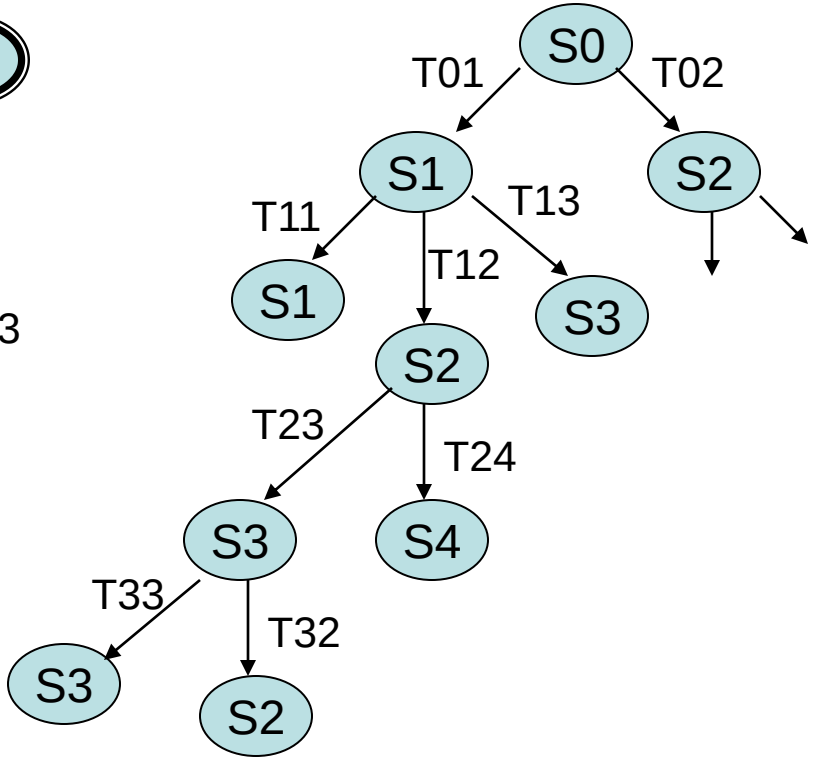
State-Based Regression Testing

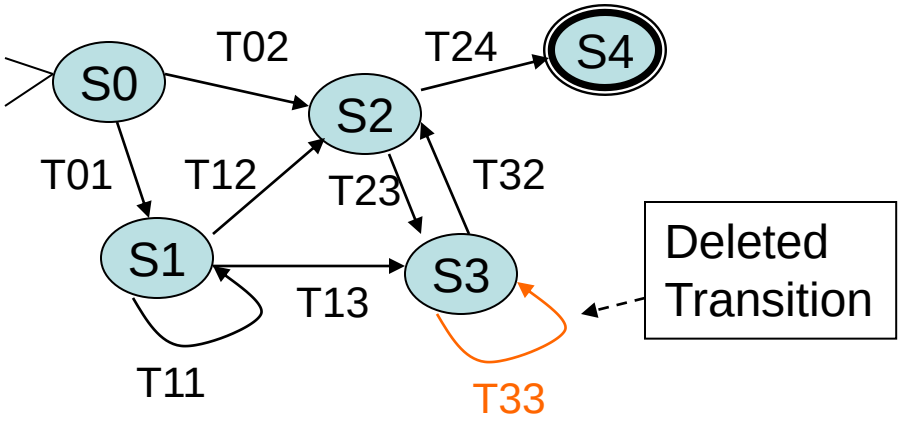




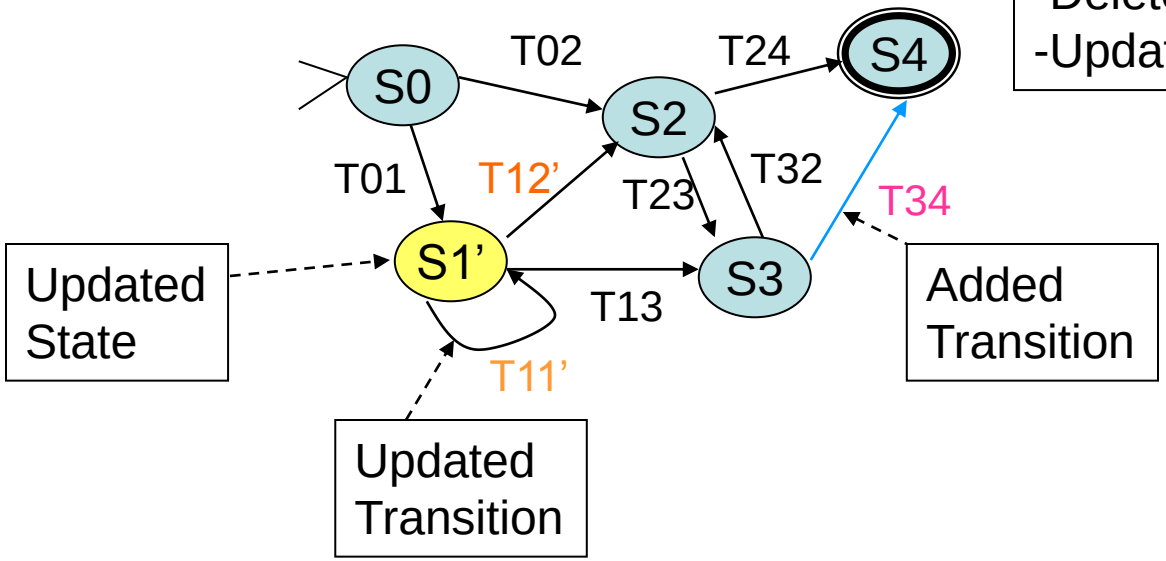
Test cases:

Level #1: S0->T01->S1
S0->T02>S2
Level #2: S0->T01->S1->T11->S1
S0->T01->S1->T12->S2
S0->T01->S1->T13->S3
…….

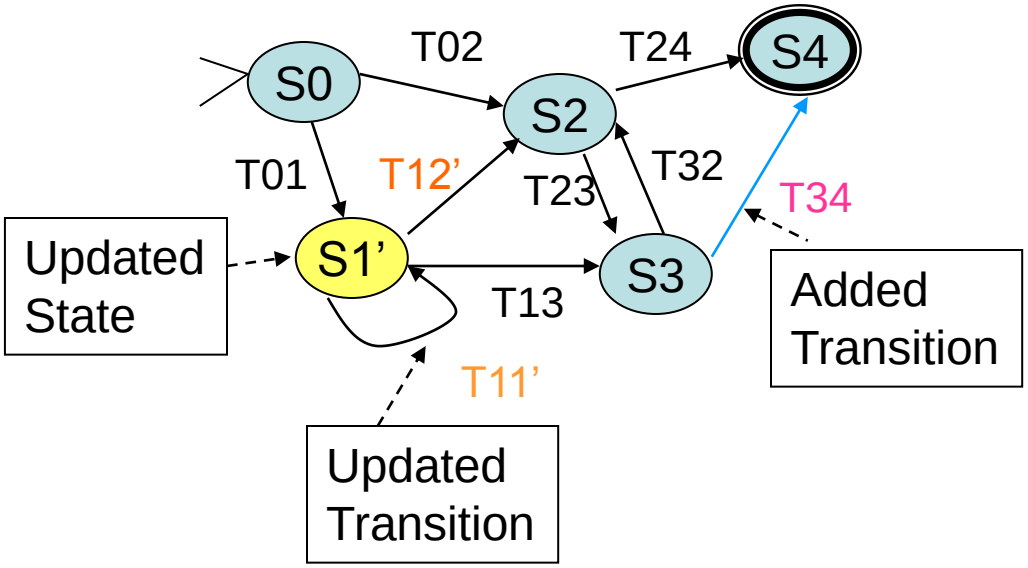
State-Based Regression Testing

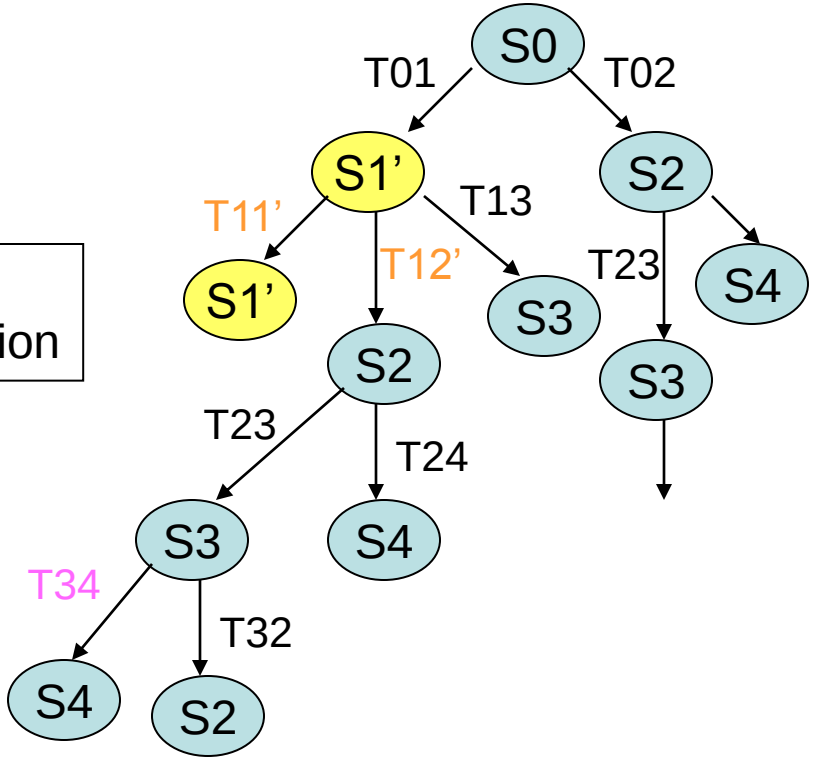


State-Based Model Changes:
-Add new states
-Delete old states
-Add new transitions
-Delete old transitions
-Updated states
-Updated transitions
-Added paths
-Deleted paths
-Updated paths



State-Based Regression Testing





Test cases:

Level #1: S0->T01->S1' (updated)
S0->T02>S2 (reusable)

Level #2: S0->T01->S1'->T11'->S1 (updated)
S0->T01->S1'->T12'->S2 (updated)
S0->T01->S1'->T13->S3 (updated)
…….
S0->T02->S2->T24->S4 (reusable)

Decision-Based Regression Testing

Decision Table for the Triangle Program:

Conditions	**C1: a<b+c** **C2: a=b** **C3: b=c**	**F** **-** **-**	**T** **T** **T**	**T** **T** **F**	**T** **F** **T**	**T** **F** **F**
Actions	**Not a triangle** **Scalene** **Isosceles** **Equilateral**	**X**	 **X**	 **X**	 **X**	 **X**

Assume a≥b≥c>0. Table 1. Decision Table

Conditions	**C1: a<b+c** **C2: a=b or b=c**	**F** **-**	**T** **T**	**T** **F**
Actions	**Not a triangle** **Scalene** **Regular**	**X**	 **X**	 **X**

Assume a≥b≥c>0. Table 2 Updated Decision Table

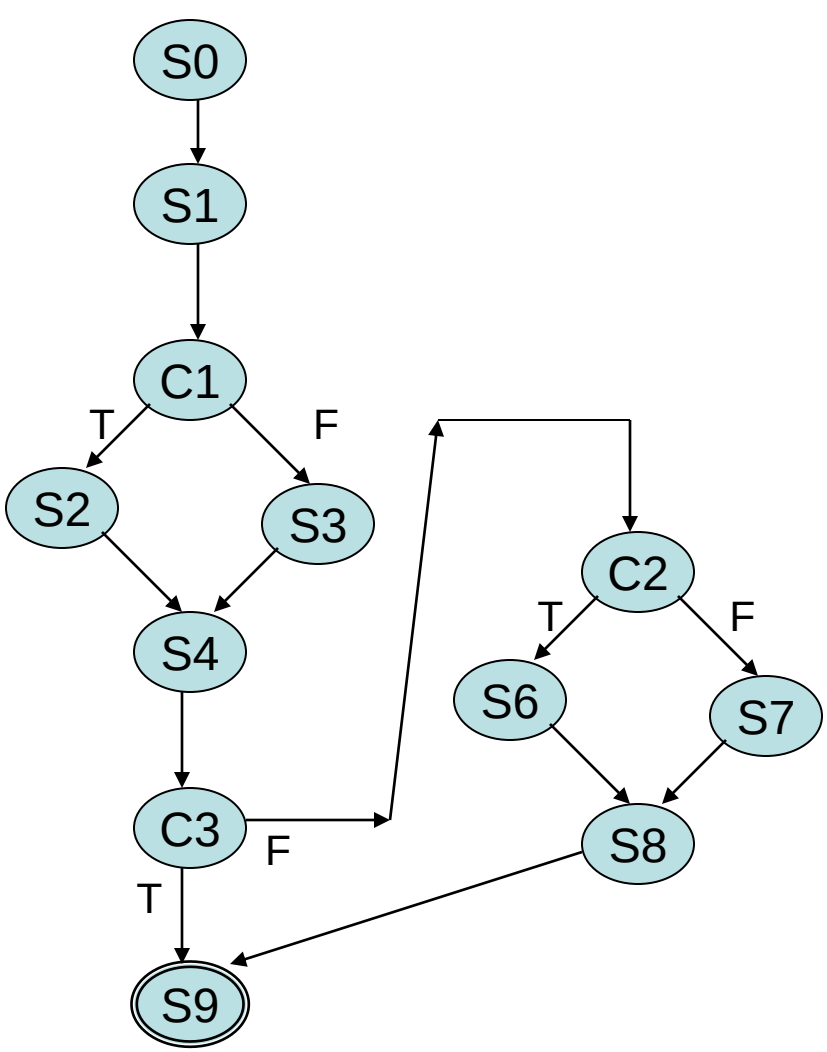
Decision-Based Regression Testing

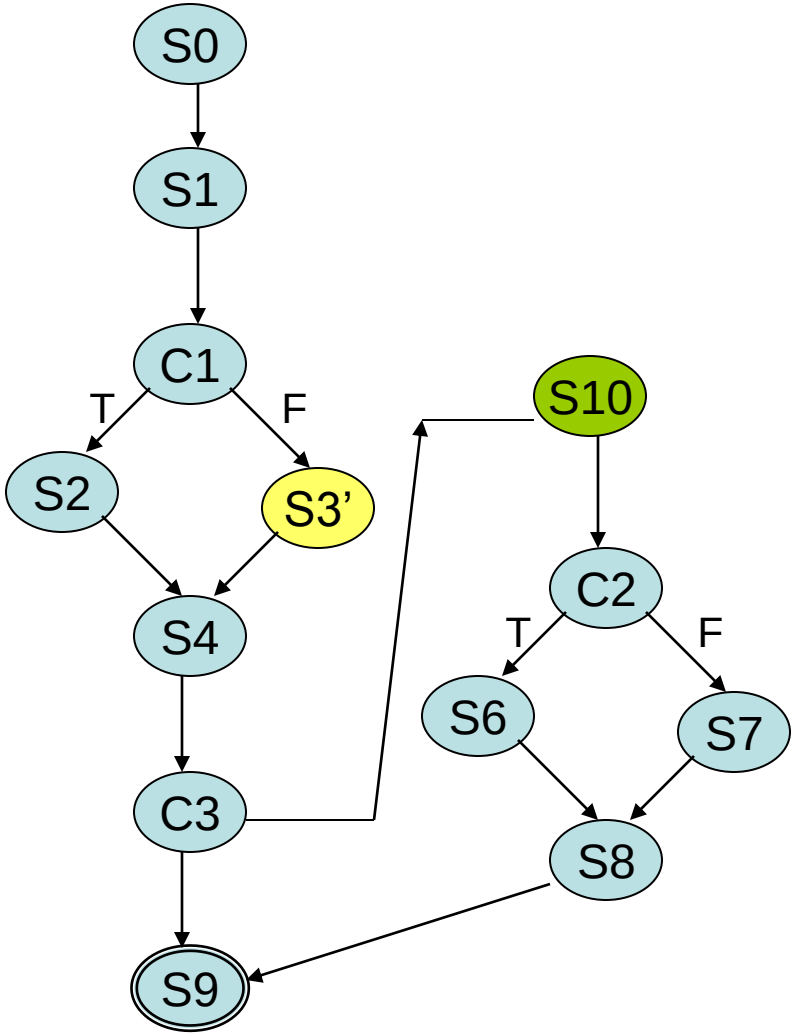
Decision Table-Based Testing:

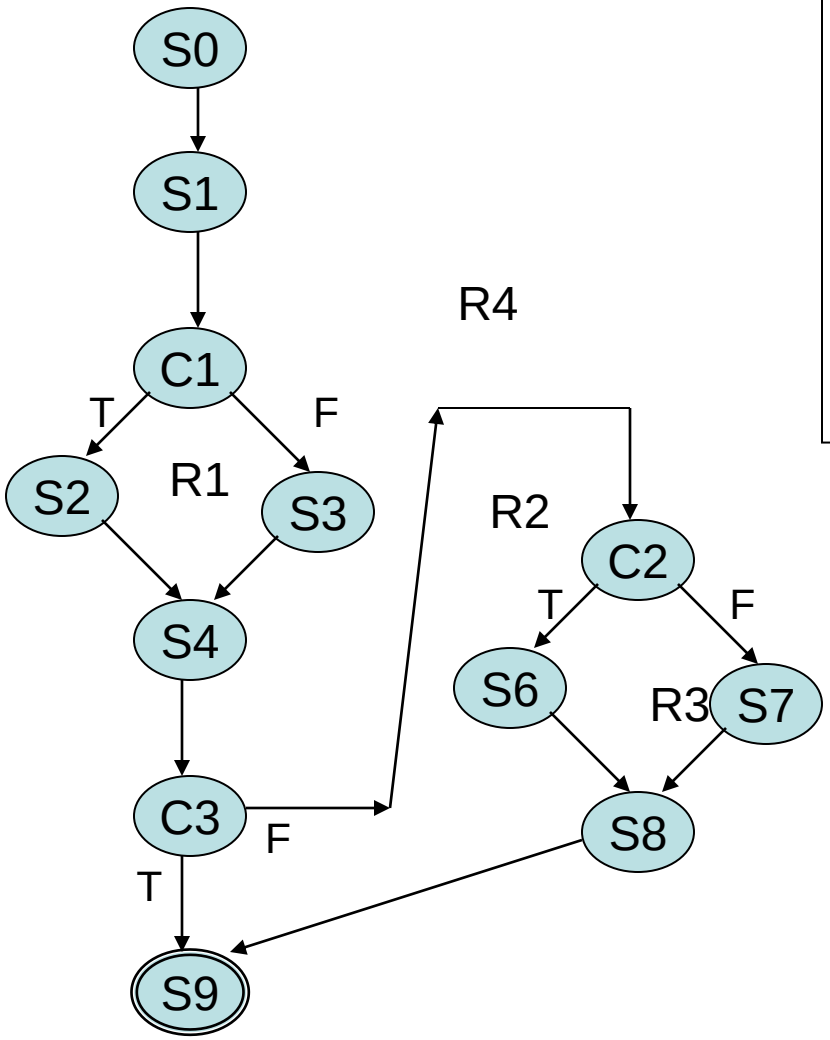
Conditions	**C1: a<b+c** **C2: a=b** **C3: b=c** **C4: $a^2=b^2+c^2$**	**F** **-** **-** **-**	**T** **T** **T** **-**	**T** **T** **F** **-**	**T** **F** **T** **-**	**T** **F** **F** **-**	**-** **-** **-** **T**
Actions	**Not a triangle** **Scalene** **Isosceles** **Equilateral** **Right Triangle**	**X**				**X**	**X**

Assume a≥b≥c>0

Table 6.3 Partial decision table for specialization customization

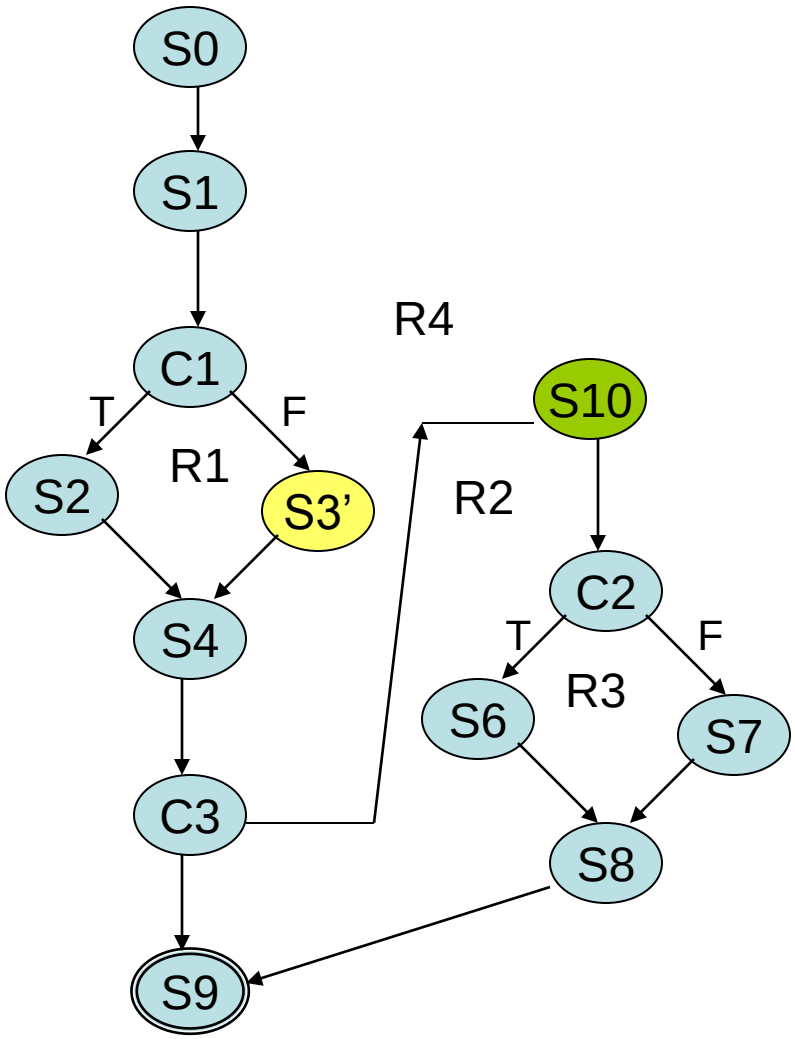

S0
S1
C1
T
F
S2
S3
S4
C2
T
F
S6
S7
C3
F
S8
T
S9


S0
S1
C1
T
F
S2
S3’
S4
S10
C2
T
F
S6
S7
C3
S8
S9



Basis Path Set:

P1: S0->S1->C1->S2->S4->C3->S9
P2: S0->S1->C1->S3->S4->C3->S9
P3: S0->S1->C1->S3->S4->C3->C2
->S6->S8->S9
P4: S0->S1->C1->S2->S4->C3->C2
->S7->S8->S9



New Basis Path Set:

P1: S0->S1->C1->S2->S4->C3->S9
P2: S0->S1->C1->S3'->S4->C3->S9
P3: S0->S1->C1->S3'->S4->C3->S10
->C2->S6->S8->S9
P4: S0->S1->C1->S2->S4->C3->S10
->C2->S7->S8->S9

Old Basis Path Set:

P1: S0->S1->C1->S2->S4->C3->S9
P2: S0->S1->C1->S3->S4->C3->S9
P3: S0->S1->C1->S3->S4->C3->C2
->S6->S8->S9
P4: S0->S1->C1->S2->S4->C3->C2
->S7->S8->S9