

Inverting an FSM

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```
In[1]:= transitions = {  
    "INIT,Open,1,OpenOk,Process",  
    "INIT,Open,2,OpenFail,FINAL",  
    "Process,Add,1,AddOK,Process",  
    "Process,Add,2,RetryAdd,Process",  
    "Process,Add,3,AddFail,FINAL",  
    "Process,Close,1,CloseOk,FINAL",  
    "Process,Close,2,CloseFail,FINAL"};
```

```
In[2]:= transitions // TableForm
```

```
Out[2]/TableForm=  
INIT,Open,1,OpenOk,Process  
INIT,Open,2,OpenFail,FINAL  
Process,Add,1,AddOK,Process  
Process,Add,2,RetryAdd,Process  
Process,Add,3,AddFail,FINAL  
Process,Close,1,CloseOk,FINAL  
Process,Close,2,CloseFail,FINAL
```

```
In[3]:= mirror$trans = {};
```

```
In[4]:= (  
    {from, event, guard, out, nxt} = StringSplit[#, ", "];  
    If[from == "INIT",  
        AppendTo[mirror$trans,  
            {"INIT", "callin", "NOGUARD_YET", event, "INIT" <> "_" <> event}  
        ]];  
    If[nxt == "FINAL",  
        AppendTo[mirror$trans,  
            {from <> "_" <> event, out, "NOGUARD_YET", "-", "FINAL"}  
        ]];  
    ) & /@ transitions;
```

```
In[5]:= (  
    {l$from, l$event, l$guard, l$out, l$nxt} = StringSplit[#, ", "];  
    (  
        {r$from, r$event, r$guard, r$out, r$nxt} = StringSplit[#, ", "];  
        If[l$nxt == r$from,  
            AppendTo[mirror$trans, {l$from <> "_" <> l$event,  
                l$out, "NOGUARD_YET", r$event, r$from <> "_" <> r$event}];  
        ]  
    ) & /@ transitions  
    ) & /@ transitions;
```

```
In[6]:= mirror$trans = Union[mirror$trans];
```

```
In[7]:= MapIndexed[(
  {from, event, guard, out, nxt} = #;
  {from, event, from <> "_" <> event <> "_" <> ToString[#2[[1]]], out, nxt}
) &, mirror$trans];
```

```
In[8]:= % // TableForm
```

```
Out[8]//TableForm=
```

INIT	callin	INIT_callin_1	Open	INIT_Open
INIT_Open	OpenFail	INIT_Open_OpenFail_2	-	FINAL
INIT_Open	OpenOk	INIT_Open_OpenOk_3	Add	Process_Add
INIT_Open	OpenOk	INIT_Open_OpenOk_4	Close	Process_Close
Process_Add	AddFail	Process_Add_AddFail_5	-	FINAL
Process_Add	AddOk	Process_Add_AddOk_6	Add	Process_Add
Process_Add	AddOk	Process_Add_AddOk_7	Close	Process_Close
Process_Add	RetryAdd	Process_Add_RetryAdd_8	Add	Process_Add
Process_Add	RetryAdd	Process_Add_RetryAdd_9	Close	Process_Close
Process_Close	CloseFail	Process_Close_CloseFail_10	-	FINAL
Process_Close	CloseOk	Process_Close_CloseOk_11	-	FINAL