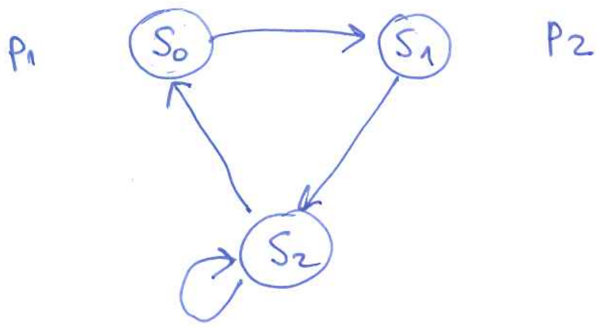
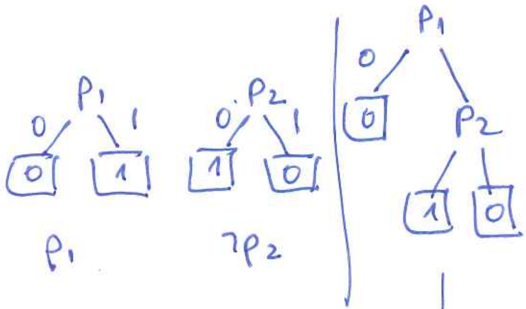
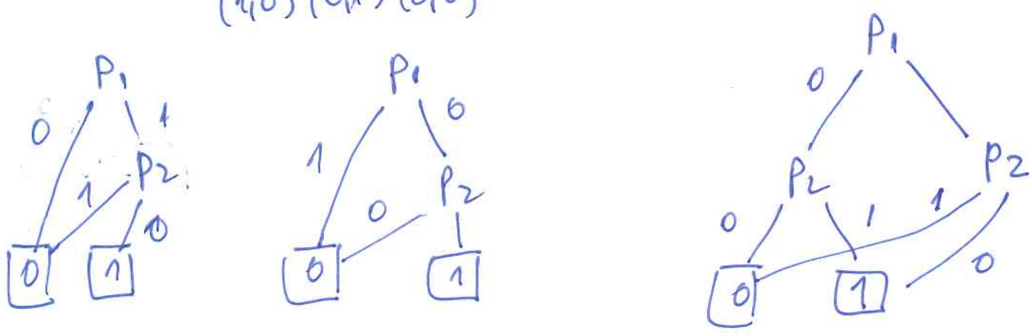
1. Representing subsets of the set of states.





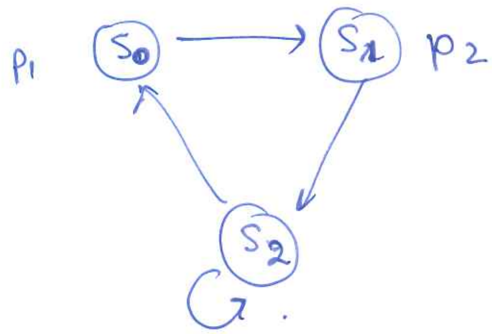
$p_1 < p_2$

Set of states	Repres. Bool values	Repr. B. funct	OBDD
$\emptyset$		0	$\boxed{0}$
$\{s_0\}$	(1,0)	$p_1 \wedge \neg p_2$	
$\{s_1\}$	(0,1)	$\neg p_1 \wedge p_2$	
$\{s_2\}$	(0,0)	$\neg p_1 \wedge \neg p_2$	
$\{s_0, s_1\}$	(1,0), (0,1)	$(p_1 \wedge \neg p_2) \vee (\neg p_1 \wedge p_2)$	
S ----	(1,0) (0,1) (0,0)		



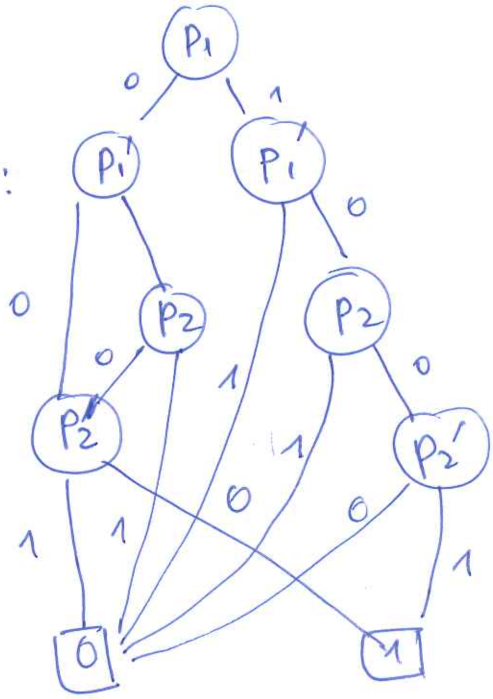
OBDD.

Representing the transition relation



p_1	p_2	p_1'	p_2'	$\to$
0	0	0	0	1
0	0	0	1	0
0	0	1	0	1
0	0	1	1	0
0	1	0	0	1
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	1
1	0	1	0	0
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0

OBDD:



$$f_{\to} = (\neg p_1 \wedge \neg p_2 \wedge \neg p_1' \wedge \neg p_2') \vee (\neg p_1 \wedge \neg p_2 \wedge p_1' \wedge \neg p_2') \vee (p_1 \wedge \neg p_2 \wedge \neg p_1' \wedge p_2') \vee$$
$$\vee (\neg p_1 \vee p_2 \vee \neg p_1' \wedge \neg p_2')$$

Implementing the functions $pre_\exists$, $pre_\forall$:

Rename vars in B_X to primed versions.

Compute OBDD for

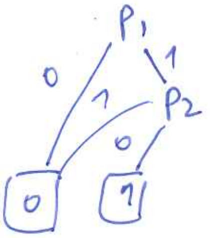
$$exists(\vec{x}', apply(\cdot, B_\rightarrow, B_{X'}))$$

using the apply and exists alg.

Example: $EO\,p_1$

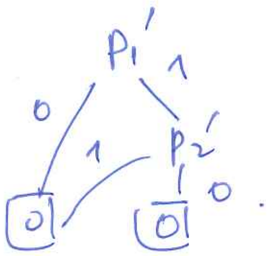
$Sat(EO\,p_1)$

$X := Sat(p_1) = \{s_0\}$



$Y := pre_\exists(X) = \{ s \in S \mid \exists s' (s \rightarrow s' \text{ and } s' \in X) \}$

Rename variables in B_X to primed versions.



Compute OBDD for $exists(p_1, p_2\ apply(\wedge, B_\rightarrow, B_{X'}))$

This can be implemented as a big disjunction, taking into account all combinations of truth values for p_1, p_2

~~restrict(0, p1, B~~

$\rightarrow [\, exists(p, B_f) = apply(\vee, restrict(0, p, B_f), restrict(1, p, B_f))]$