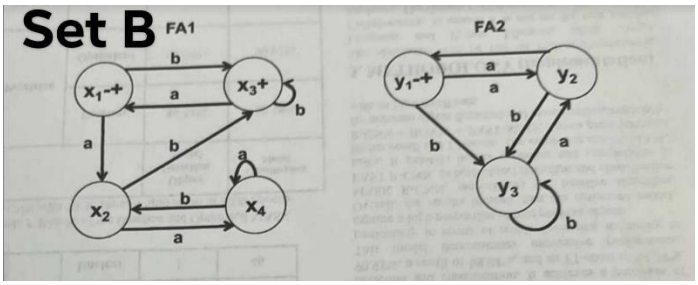
CS281: Introduction to Automata Theory

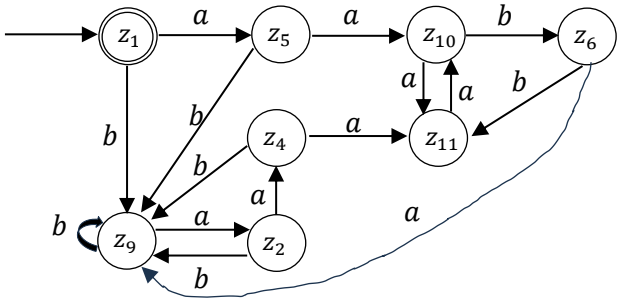
Intersection Equivalence Quiz

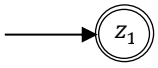
1.

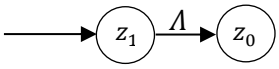


Z	X	Y	$FA_1{}'$	$FA_2{}'$	$FA_1' + FA_2{}'$	$(FA_1' + FA_2{}')'$	X	Y	XY	X	Y	XY
z_1	x_1	y_1	-	-	-	±	x_2	y_2	z_5	x_3	y_3	z_9
z_2	x_1	y_2	-	+	+		x_2	y_1	z_4	x_3	y_3	z_9
z_3	x_1	y_3	-	+	+		x_2	y_2	z_5	x_3	y_3	z_9
z_4	x_2	y_1	+	-	+		x_4	y_2	z_{11}	x_3	y_3	z_9
z_5	x_2	y_2	+	+	+		x_4	y_1	z_{10}	x_3	y_3	z_9
z_6	x_2	y_3	+	+	+		x_4	y_2	z_{11}	x_3	y_3	z_9
z_7	x_3	y_1		-		+	x_1	y_2	z_2	x_3	y_3	z_9
z_8	x_3	y_2		+	+		x_1	y_1	z_1	x_3	y_3	z_9
z_9	x_3	y_3		+	+		x_1	y_2	z_2	x_3	y_3	z_9
z_{10}	x_4	y_1	+	-	+		x_4	y_2	z_{11}	x_2	y_3	z_6
z_{11}	x_4	y_2	+	+	+		x_4	y_1	z_{10}	x_2	y_3	z_6
z_{12}	x_4	y_3	+	+	+		x_4	y_2	z_{11}	x_2	y_3	z_6

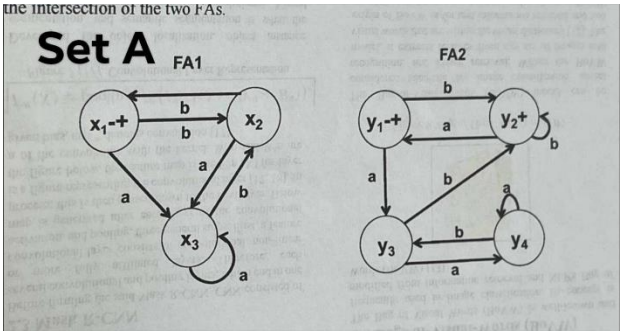
Graph: Eto lang yung graph kasi no end state after kay z_1





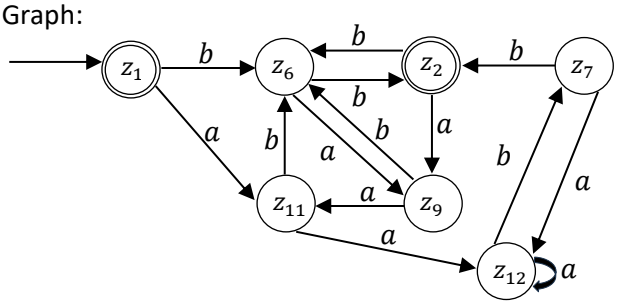


2. the intersection of the two FAs.

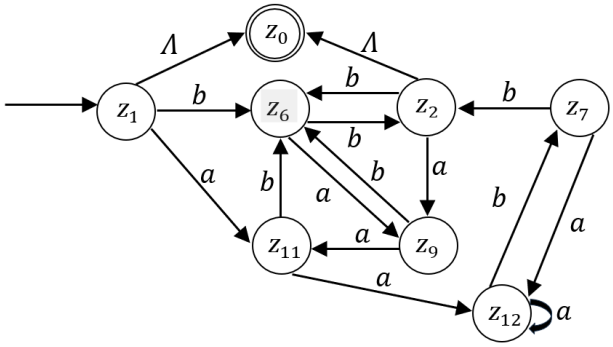


Z	X	Y	FA_1'	FA_2'	$FA_1' + FA_2'$	$(FA_1' + FA_2')'$	X	Y	XY	X	Y	XY
z_1	x_1	y_1	-	-	-	±	x_3	y_3	z_{11}	x_2	y_2	z_6
z_2	x_1	y_2	-			+	x_3	y_1	z_9	x_2	y_2	z_6
z_3	x_1	y_3	-	+	+		x_3	y_4	z_{12}	x_2	y_2	z_6
z_4	x_1	y_4	-	+	+		x_3	y_4	z_{12}	x_2	y_3	z_7
z_5	x_2	y_1	+	-	+		x_3	y_3	z_{11}	x_1	y_2	z_2
z_6	x_2	y_2	+		+		x_3	y_1	z_9	x_1	y_2	z_2
z_7	x_2	y_3	+	+	+		x_3	y_4	z_{12}	x_1	y_2	z_2
z_8	x_2	y_4	+	+	+		x_3	y_4	z_{12}	x_1	y_3	z_3
z_9	x_3	y_1	+	-	+		x_3	y_3	z_{11}	x_2	y_2	z_6
z_{10}	x_3	y_2	+		+		x_3	y_1	z_9	x_2	y_2	z_6
z_{11}	x_3	y_3	+	+	+		x_3	y_4	z_{12}	x_2	y_2	z_6
z_{12}	x_3	y_4	+	+	+		x_3	y_4	z_{12}	x_2	y_3	z_7

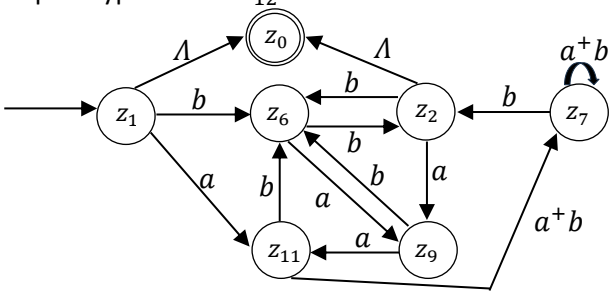
Graph:



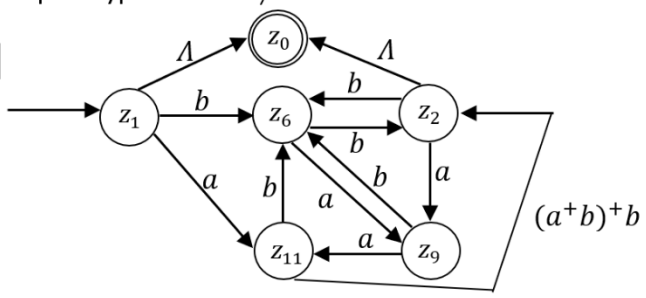
Step 1: Create a unique end state



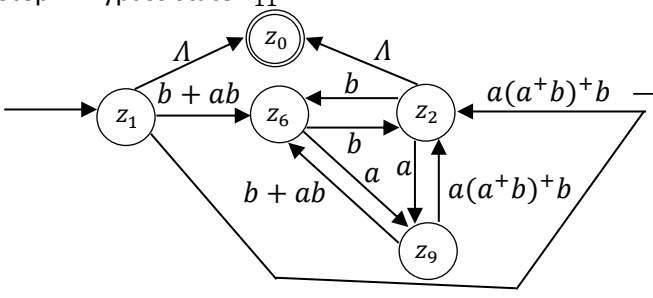
Step 2: Bypass state z_{12}



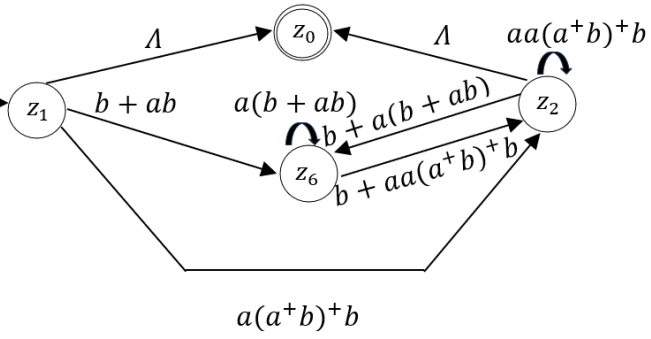
Step 3: Bypass state z_7



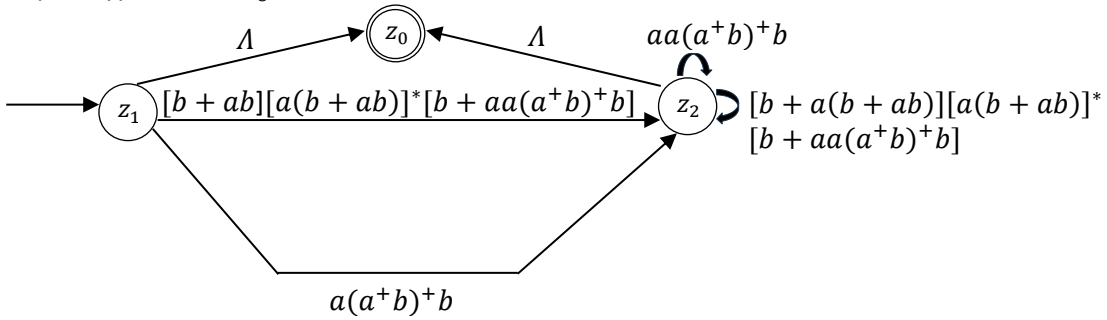
Step 4: Bypass state z_{11}



Step 5: Bypass state z_9



Step 6: Bypass state z_6



Step 7: Bypass state z_2