CEN6070 – Software Verification, Spring 2010

Homework #1 (8 points), **Due** Jan. 26 (Tuesday)

Given following simple parallel program:

$P \equiv turn := 1; found := \textbf{false}; \textbf{cobegin } S1 \parallel S2 \textbf{ coend}$

where

$S1 \equiv$ $x := 0;$
　　　while $\neg found$ **do**
　　　　　wait($turn = 1$);
　　　　　$turn := 2;$
　　　　　$x := x + 1;$
　　　　　if $x = C$ **then** $found :=$ **true end if**;
　　　end while;
　　　$turn := 2;$

and

$S2 \equiv$ $y := 1;$
　　　while $\neg found$ **do**
　　　　　wait($turn = 2$);
　　　　　$turn := 1;$
　　　　　$y := y - 1;$
　　　　　if $y = C$ **then** $found :=$ **true end if**;
　　　end while;
　　　$turn := 1$

//C is a user provided input.

Requirements:
(1) Label the program;
(2) Convert the labeled program into a Kripke structure,
(3) Draw the reachable state graph of the Kripke structure given $C = 2$.