CEN6070 – Software Verification, Fall 2008

Homework #1 (8 points), **Due** September 18 (Thursday)

Consider the following solution to the producer / consumer problem:
P ≡ *full* := 1; *empty* := 0; *i*:= 0; *j*:= 0; **cobegin** *PROD* || *CONS* **coend**
where

```
PROD ≡    while i < M do
              x := a[i];
              lock(empty);
              buffer := x;
              unlock(full);
              i := i + 1;
          end while
```

and

```
CONS ≡    while j < M do
              lock(full);
              y := buffer;
              unlock(empty);
              b[j] := y;
              j := j + 1;
          end while
```

Requirements:
(1) Label the program;
(2) Convert the labeled program into a kripke structure,
(3) Let *a*[0] = 2, and *a*[1] = 5, and *M* = 2; draw the reachable state graph of the Kripke structure.