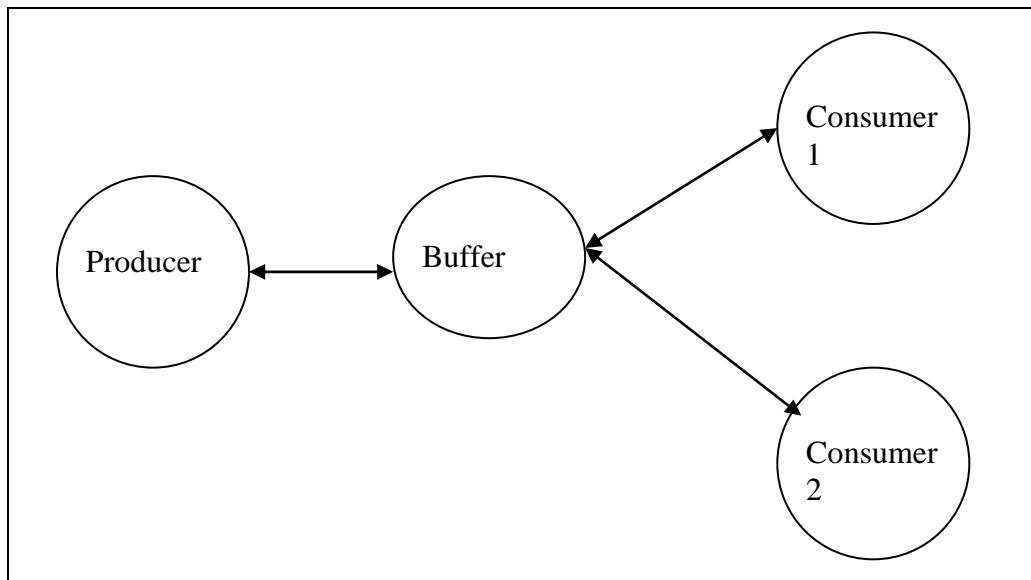




COP 6614 Operating Systems Techniques
Assignment #2
Due Date: 16 November, 2004 midnight

To write a concurrent program using JCSP for the following scenarios:

1. **Producer Consumer Problem:** Implement a 1 Producer and 2 Consumer problem with a shared buffer using message passing.



You have to implement according to the following specifications:

- The Producer process takes in the number of items and the speed at which it will produce an item as parameters.
- The Buffer process implements a circular queue of size 20. Once the Buffer process detects that the queue has been emptied, it will send a signal to the two consumers to indicate that the buffer is empty.
- The two Consumers processes will run at different speeds as defined by a parameter passed to it. The two consumers should then terminate normally when the Buffer process informs them that there are no more items to consume.

2. **Ricart – Agrawal Algorithm:** Implement the Optimal Algorithm for Mutual Exclusion for Computer Networks as given by Ricart and Agrawal. (The paper was presented in class). The link for the paper is <http://www.cs.ucf.edu/%7Eeurip/cop6614/Ricart-Agrawala.pdf>
The number of nodes in the network (N) will be passed as a parameter.
NOTE: Use Message Passing to resolve all synchronizations. (Do not use Semaphores)

Deliverables:

- Two separate documents explaining your implementation of the above two problems. NOTE: This document is not a user manual. This is a design document. Here is a sample template of how it should look like.

Section1: Introduction -> This section is for Requirements Definition/Analysis, which defines the problem statement.

Section2: Approach -> This section is for the High Level Design, which will explain how you will solve the problem.

Section3: Implementation -> This section is for the Detailed Design which will give the pseudo-code that you will implement. It will also specify any implementation specific details.

Section4: References -> This section is optional. This section includes any other papers, books or internet sites that you may have referenced.

- The Source Codes for the above two problems.

NOTE: Documentation carries 30% of the marks.

Submission

- Email the source code by the midnight of 11/16/04 to ekambara@cs.ucf.edu with the subject line as “COP 6614 – Assignment 2 Submission.
- Hand over the printouts of the design documents in the class on 11/16/2004.