SNS COLLEGE OF TECHNOLOGY

Coimbatore-35

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

23CST202- OPERATING SYSTEMS

II YEAR AIML B IV SEM

UNIT 1 – OVERVIEW AND PROCESS MANAGEMENT

TOPIC – CO OPERATING PROCESSES

Cooperating Processes

- *Independent* process cannot affect or be affected by the execution of another process.
- *Cooperating* process can affect or be affected by the execution of another process
- Advantages of process cooperation
  - Information sharing
  - Computation speed-up
  - Modularity
  - Convenience

Producer-Consumer Problem

- Paradigm for cooperating processes, *producer* process produces information that is consumed by a *consumer* process.
    - *unbounded-buffer* places no practical limit on the size of the buffer.
    - *bounded-buffer* assumes that there is a fixed buffer size.

Bounded-Buffer – Shared-Memory Solution

- Shared data

```
#define BUFFER_SIZE 10
Typedef struct {
  . . .
} item;
item buffer[BUFFER_SIZE];
int in = 0;
int out = 0;
```

- Solution is correct, but can only use BUFFER_SIZE-1 elements

Bounded-Buffer – Producer Process

```
item nextProduced;

while (1) {
        while (((in + 1) % BUFFER_SIZE) == out)
                ; /* do nothing */
        buffer[in] = nextProduced;
        in = (in + 1) % BUFFER_SIZE;
}
```

Bounded-Buffer – Consumer Process

```
item nextConsumed;

while (1) {
        while (in == out)
                ; /* do nothing */
        nextConsumed = buffer[out];
        out = (out + 1) % BUFFER_SIZE;
}
```