**Week – 4**

**Semaphore Producer Consumer**

#include <stdio.h>

#include <stdlib.h>

#define BUFFER\_SIZE 3

int mutex = 1; //0:lock 1:unlock

int full = 0;

int empty = BUFFER\_SIZE;

int x = 0;// produced items

void wait(int S) {

while (S <= 0);

(S)--;

}

void signal(int S) {

(S)++;

}

void producer() {

wait(mutex);

wait(empty);

x++;

printf("Producer has produced: Item %d\n", x);

signal(full);

signal(mutex);

}

void consumer() {

wait(mutex);

wait(full);

printf("Consumer has consumed: Item %d\n", x);

x--;

signal(empty);

signal(mutex);

}

int main() {

int choice;

printf("\nEnter 1.Producer 2.Consumer 3.Exit\n");

while (1) {

printf("Enter your choice: ");

scanf("%d", &choice);

switch (choice) {

case 1: if (empty > 0){

producer();

}

else{

printf("Buffer is full!\n");

}

break;

case 2: if (full > 0){

consumer();

}

else{

printf("Buffer is empty!\n");

}

break;

case 3: exit(0);

default: printf("Invalid choice! Try again.\n");

}

}

return 0;

}

