# Name: Akash Kumar Singh

# Roll no: 201460

# Batch: CS 48

LAB EXERCISE 11

**Code:**

#include<stdio.h>

#define size 3

int buffer[size];

int in,out;

int full=0;

int empty=size;

int mutex=1; //can be 0 or 1 only

void wait\_empty()

{

if(empty==0)

{

printf("\nEmpty is 0.");

return;

}

empty=empty-1;

}

void wait\_mutex()

{

if(mutex==0)

{

printf("\nMutex is 0.");

return;

}

mutex=mutex-1;

}

void wait\_full()

{

if(full==0)

{

printf("\nFull is 0.");

return;

}

full=full-1;

}

void signal\_mutex()

{

if(mutex==1)

{

printf("\nMutex cannot be greater than 1.");

return;

}

mutex=mutex+1;

}

void signal\_full()

{

if(full==size)

{

printf("\nBuffer is Full.");

return;

}

full++;

}

void signal\_empty()

{

if(empty==size)

{

printf("\nBuffer is Empty.");

return;

}

empty++;

}

void producer(int a)

{

if(full==size)

{

printf("\nBuffer is Full.");

return;

}

wait\_mutex();

wait\_empty();

buffer[in]=a;

in=(in+1)%size;

signal\_mutex();

signal\_full();

}

void consumer()

{

if(empty==size)

{

printf("\nBuffer is Empty.");

return;

}

wait\_mutex();

wait\_full();

buffer[out]=0;

out=(out+1)%size;

signal\_mutex();

signal\_empty();

}

void display()

{

printf("\nThe Buffer is:\n");

for(int i=0;i<size;i++)

printf("%d\t",buffer[i]);

printf("\nIn:%d",in);

printf("\nOut:%d",out);

printf("\nFull:%d",full);

printf("\nEmpty:%d",empty);

}

int main()

{

int option,a;

printf("\nMENU -\n1.Producer\n2.Consumer\n3.Exit");

do

{

printf("\nEnter the option:");

scanf("%d",&option);

switch(option)

{

case 1: printf("\nProducer an integer:");

scanf("%d",&a);

producer(a);

display();

break;

case 2: consumer();

display();

break;

default:printf("\n\nThank You!");

}

}while(option!=3);

return 0;

}

**//Output -**





