Name – Krishnaprasad Awala

Enrollment no – MITU21BTITD006

Roll no – D2215004

Code :

#include <iostream>

#include <cstdlib>

using namespace std;

// Initialize a mutex to 1

int mutex = 1;

// Number of full slots as 0

int full = 0;

// Number of empty slots as size of buffer

int empty\_slots, bufferSize, x = 0;

// Function to produce an item and add it to the buffer

void producer()

{

// Decrease mutex value by 1

--mutex;

// Increase the number of full slots by 1

++full;

// Decrease the number of empty slots by 1

--empty\_slots;

// Item produced

x++;

cout << "\nProducer produces item " << x << endl;

// Increase mutex value by 1

++mutex;

}

// Function to consume an item and remove it from buffer

void consumer()

{

// Decrease mutex value by 1

--mutex;

// Decrease the number of full slots by 1

--full;

// Increase the number of empty slots by 1

++empty\_slots;

cout << "\nConsumer consumes item " << x << endl;

x--;

// Increase mutex value by 1

++mutex;

}

// Driver Code

int main()

{

int n, i;

cout << "\nEnter the buffer size: ";

cin >> bufferSize;

empty\_slots = bufferSize;

cout << "\n1. Press 1 for Producer"

"\n2. Press 2 for Consumer"

"\n3. Press 3 for Exit\n";

for (i = 1; i > 0; i++) {

cout << "\nEnter your choice: ";

cin >> n;

// Switch Cases

switch (n) {

case 1:

// If mutex is 1 and empty is non-zero, then it is possible to produce

if ((mutex == 1)

&& (empty\_slots != 0)) {

producer();

}

// Otherwise, print buffer is full

else {

cout << "Buffer is full!" << endl;

}

break;

case 2:

// If mutex is 1 and full is non-zero, then it is possible to consume

if ((mutex == 1)

&& (full != 0)) {

consumer();

}

// Otherwise, print Buffer is empty

else {

cout << "Buffer is empty!" << endl;

}

break;

// Exit Condition

case 3:

exit(0);

break;

default:

cout << "Invalid choice!" << endl;

break;

}

}

return 0;

}

Output :

