

Main.java



Run

Output

```

1 import java.util.LinkedList;
2 import java.util.Queue;
3 import java.util.concurrent.Semaphore;
4
5 class ProducerConsumer {
6     public static void main(String[] args) {
7         // Shared buffer
8         Buffer buffer = new Buffer(5);
9
10        // Create producer and consumer threads
11        Thread producerThread = new Thread(new Producer
            (buffer));
12        Thread consumerThread = new Thread(new Consumer
            (buffer));
13
14        // Start the threads
15        producerThread.start();
16        consumerThread.start();
17    }

```

```

java -cp /tmp/zdoxqc4U9h/ProducerConsumer
Produced: 0
Consumed: 0
Produced: 1
Consumed: 1
Produced: 2
Consumed: 2
Produced: 3
Produced: 4
Consumed: 3
Produced: 5
Consumed: 4
Produced: 6
Produced: 7
Consumed: 5
Produced: 8
Consumed: 6
Produced: 9
Produced: 10

```

main.c



Run

## Output

```

1 #include <stdio.h>
2 #include <stdlib.h>
3 #include <string.h>
4 #include <sys/socket.h>
5 #include <netinet/in.h>
6
7 int add(int a, int b) {
8     return a + b;
9 }
10
11 int main() {
12     int server_sock, client_sock;
13     struct sockaddr_in server_addr, client_addr;
14     socklen_t addr_size;
15     int buffer[1024];
16
17     // Create socket
18     server_sock = socket(AF_INET, SOCK_STREAM, 0);
19     if (server_sock < 0) {
20         perror("[-]Socket error");
21         exit(1);
22     }
23     printf("[+]Server socket created.\n");
24
25     // Configure settings

```

```
[+]Client socket created.  
[+]Connected to server.  
[+]Data sent.  
[+]Result received: 30  
[+]Connection closed.
```





main.c



Run

Output

```
1 #include <windows.h>
2 #include <stdio.h>
3
4 HANDLE mutexReadCount;
5 HANDLE mutexResource;
6 int readCount = 0;
7
8 DWORD WINAPI reader(LPVOID Param) {
9     int readerId = *((int*)Param);
10
11     WaitForSingleObject(mutexReadCount, INFINITE);
12     readCount++;
13     if (readCount == 1) {
14         WaitForSingleObject(mutexResource, INFINITE);
15     }
16     ReleaseMutex(mutexReadCount);
17
18     // Reading section
19     printf("Reader %d is reading\n", readerId);
20     Sleep(1000); // Simulate reading time
21     printf("Reader %d finished reading\n", readerId);
22
23     WaitForSingleObject(mutexReadCount, INFINITE);
24     readCount--;
25     if (readCount == 0) {
```

```
Reader 1 is reading
Reader 2 is reading
Reader 3 is reading
Reader 4 is reading
Reader 5 is reading
Reader 6 is reading
Reader 7 is reading
Reader 8 is reading
Reader 9 is reading
Reader 10 is reading
Writer 1 is trying to write
Reader 10 finished reading
Reader 9 finished reading
Reader 8 finished reading
Reader 7 finished reading
Reader 6 finished reading
Reader 5 finished reading
Reader 4 finished reading
Reader 3 finished reading
Reader 2 finished reading
Reader 1 finished reading
Writer 1 is writing
Writer 1 finished writing
Writer 2 is trying to write
Writer 2 is writing
```



Main.java



Run

Output

```
1 import java.util.*;
2
3 public class PageReplacementAlgorithms {
4
5     public static void main(String[] args) {
6         int[] pages = {7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2};
7         int capacity = 4;
8
9         System.out.println("Number of page faults in FIFO: "
10             + fifo(pages, capacity));
11         System.out.println("Number of page faults in LRU: "
12             + lru(pages, capacity));
13         System.out.println("Number of page faults in OPT: "
14             + opt(pages, capacity));
15     }
16
17     public static int fifo(int[] pages, int capacity) {
18         Set<Integer> set = new HashSet<>(capacity);
```

```
java -cp /tmp/x1HtasW4yY/PageReplacementAlgorithms
Number of page faults in FIFO: 7
Number of page faults in LRU: 6
Number of page faults in OPT: 6
```

=== Code Execution Successful ===

main.c

```
1 #include <stdio.h>
2 #include <stdlib.h>
3
4 #define MAX_FRAMES 10
5 #define MAX_PAGES 50
6
7 int pages[MAX_PAGES];
8 int pageFrames[MAX_FRAMES];
9 int total_pages, frames;
10
11 // Prototypes
12 void FIFO();
13 void LRU();
14 void OPTIMAL();
15
16 int findPage(int page, int pageFrames[], int frames) {
17     for (int i = 0; i < frames; i++) {
18         if (pageFrames[i] == page) {
19             return i;
20         }
21     }
22     return -1;
23 }
24
25 void initialize() {
```

Run

Output

```
FIFO:
7 -- --
7 0 --
7 0 1
2 0 1
2 0 1
2 3 1
2 3 0
4 3 0
4 2 0
4 2 3
4 0 3
FIFO - Total Page Faults: 9
```

```
LRU:
7 -- --
7 0 --
7 0 1
2 0 1
2 0 1
2 3 1
2 3 0
4 3 0
4 2 0
4 2 3
```

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Programiz

main.c

```
1 #include <stdio.h>
2 #include <stdlib.h>
3
4 int main() {
5     int n, m, i, j, k;
6     n = 5; // Number of processes
7     m = 3; // Number of resources
8     int alloc[5][3] = { {0, 1, 0}, // P0 // Allocation Matrix
9 {2, 0, 0}, // P1
10 {3, 0, 2}, // P2
11 {2, 1, 1}, // P3
12 {0, 0, 2} }; // P4
13
14 int max[5][3] = { {7, 5, 3}, // P0 // Maximum Demand Matrix
15 {3, 2, 2}, // P1
16 {9, 0, 2}, // P2
17 {2, 2, 2}, // P3
18 {4, 3, 3} }; // P4
19
20 int avail[3] = {3, 3, 2}; // Available Resources
21
22 int f[n], ans[n], ind = 0;
23 for (k = 0; k < n; k++) {
24     f[k] = 0;
25 }
```

Run

Output

```
/tmp/Sy4BxPLH5g.o
Following is the SAFE Sequence
P1 -> P3 -> P4 -> P0 -> P2

=== Code Execution Successful ===
```

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## Main.java

```
1 import java.util.concurrent.locks.Lock;
2 import java.util.concurrent.locks.ReentrantLock;
3
4 class Philosopher extends Thread {
5     private final int id;
6     private final Fork leftFork;
7     private final Fork rightFork;
8
9     public Philosopher(int id, Fork leftFork, Fork rightFork)
10    {
11        this.id = id;
12        this.leftFork = leftFork;
13        this.rightFork = rightFork;
14    }
15
16     private void think() throws InterruptedException {
17         System.out.println("Philosopher " + id + " is
            thinking.");
18         Thread.sleep((long) (Math.random() * 1000));
19     }
20 }
```

Run

## Output

```
java -cp /tmp/OECcu0hnHU/DiningPhilosophers
Philosopher 3 is thinking.
Philosopher 2 is thinking.
Philosopher 0 is thinking.
Philosopher 4 is thinking.
Philosopher 1 is thinking.
Philosopher 2 picked up left fork.
Philosopher 2 picked up right fork and starts eating.
Philosopher 2 is eating.
Philosopher 1 picked up left fork.
Philosopher 4 picked up left fork.
Philosopher 4 picked up right fork and starts eating.
Philosopher 4 is eating.
Philosopher 2 put down right fork.
Philosopher 3 picked up left fork.
Philosopher 2 put down left fork.
Philosopher 2 is thinking.
Philosopher 1 picked up right fork and starts eating.
Philosopher 1 is eating.
```