Class E/

e_1

e_1 e_2

int A = 10   int A = 10

100   201

MULTITHREADING

PROCESS   THREAD

(Program under Execution)

Application

Thread

Thread

Thread

IS THREADING ALWAYS POSSIBLE??

NO ✓

RACE CONDITION

Application

$a = 20$ → 1st Thread

$c = a + b$ → 2nd Thread

Example ⇒

Parallel Execution

r_1

r_2 →

CPU

time →

Concurrent

Scheduling Algo

r_1 tab

r_2

r_1

r_2

PCB ← Process Control Block

CPU

tab 1 tab 2
1   2
3   4

PROCESS ⤳ CPU

THREAD ⤳ CORE

CPU
1   2
3   4

2 sec

20

Thread 4   8   12   16   20
         4   8
         2   2   2   2   2

2 sec

2 sec

What happens when we run the Apl

JVM → Main thread
GC

Volatile

Note Interrupt???

Process
→ Scheduling Algos

→ PCB
→ Paging
→ Inter - Process Comm.

→ Semaphl — Mutex

→ Deadlocks
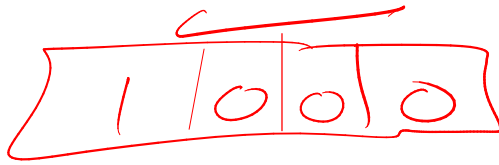→ Segmentation / Virtual Memory

⇒ Volatile

→ Race Condition

-ve

Ways to Create Thread.

{ → Extends (Thread);

{ → implements Runnable;

Beg Intge   Class
50!   20!

| 1 | 0 | 0 | 0 |

int
overflow   flow

| 2 | 0 | 0 | 0 |

| 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

Val
method

Classes

Main

Taken
time

Thread pool

Main

M_T hash

Col

Thread

Inter Bundle

Extra
Function

Main

Build

Enterprise

Tir

USE CASE

Main

Thread

Main

Run