1. The Fibonacci sequence is the series of numbers 0, 1, 1, 2, 3, 5, 8, .... Formally, it can be expressed as:

f ib0 = 0

f ib1 = 1

f ibn = f ibn−1 + f ibn−2

Write a multithreaded program that generates the Fibonacci sequence. This program should work as follows: On the command line, the user will enter the number of Fibonacci numbers that the program is to generate. The program will then create a separate thread that will generate the Fibonacci numbers, placing the sequence in data that can be shared by the threads (an array is probably the most convenient data structure). When the thread finishes execution, the parent thread will output the sequence generated by the child thread. Because the parent thread cannot begin outputting the Fibonacci sequence until the child thread finishes, the parent thread will have to wait for the child thread to finish.

Fibonacci Series means the addition the of the two consecutive positive numbers to make a number with the flow to some extent until n numbers.

For Example number starting with n0 =0

The first number is 0 and the second number is n.0 1

The newly received number is(n1)= 0 + 1 = 1

Next(n2)= n.0 + n1 = 1+1 = 2

Next n3 = n2 + n1 = 2 + 1=3

Next n4 = n3 + n2 = 5

Next n5 = 8……….

And the flow goes on till the very end of the answer with n values in the series.

Multithreading means a thread which is processed and followed during a work or program execution. Multithreading means a power of an OS to process it use and usage by more than a user at a time and makes to manage multiple works by the same without many copies of the programming running in the computer by the user.In this each process is having their own register and counter and stack and the different threads uses same code , data and files provided in multithreading application.

1. Consider a scenario of demand paged memory. Page table is held in registers. It takes 8 milliseconds to service a page fault if an empty page is available or the replaced page is not modified and 20 milliseconds if the replaced page is modified. Memory access time is 100 nanoseconds. Assume that the page to be replaced is modified 70 percent of the time. Generate a solution to find maximum acceptable page-fault rate for access time that is not more than 200 nanoseconds.

Demand Paged Memory : A Page is brought into the memory for its execution when it is demanded and residual at secondary storage area.It is combination of paging and swapping.

Advantages are Reduced memory requests and swap time is reduced and increase the degree of multiprogramming.And Disadvantage is Page Fault

Page Fault: Page Fault is exception type raised by hardware when program accesses to a memory page but it was not mapped by the memory management unit (MMU) into virtual space of a process.

Page Fault occurs when a program attempts to run a code but it is not stored in RAM

Access Time : MAT means how much a character in RAM takes to be transferred to the CPU

For Example Fast HDD can have Access Time of 5 -10 ms

SSD has 25 – 100 ms

That measn SSDs are 100 times faster than HDD because it SSDs give lower latency than the HDD and the refresh rate is lower for the storage.