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# Scheduling With Virtual Resources

SARUCHI, Amitesh Kumar Sharma, Shilpa Addy

Assistant Professor, MCA pursuing, MCA pursuing, Lovely Professional University

*Abstract— One of the most significant feature of computer era is speed. The processor contains processes to complete their task. The speed of computer depends how fast a process could complete its task. Earlier the process which used resources are sometimes may available or not. Looking at the Banker's algorithm there is a limitation of resources. To overcome this we introduce a new technique called "virtual resources" or "dummy resources". It provides the processor more speed and fast processing using cache. It's most interesting part is it doesn't reject any process.*

*Index Terms— Processor, Virtual ID, Virtual Resources.*

## I. INTRODUCTION

The most challenging factor for programmers and researchers is to increase the speed and efficiency. Speed and efficiency is directly proportional to each other and that's why computer is reliable. During the project a programmer doesn't want to waste any of their time. The speed of computer depends upon a processor which is called the "heart of computer". A computer is worthless without it. A processor is responsible for each and every job execution in system. Defining the internal structure of a processor, it had a process and a resource inside it. A process requests for a resource. With a help of different algorithms of CPU scheduling job is being executed. A process sometimes needs more than one resource for a single job execution. So at some circumstances all the resources are busy and new process which request for resources can't be allocated resources which causes deadlock. A deadlock occur due to unavailability of resources or resources didn't want mutual sharing, or resources hold one resource and waiting for another. Any of these conditions may cause deadlock. To overcome with a deadlock a Banker's Algorithm was introduced which defines "Reject the process which was in unsafe condition". An unsafe condition means the condition in which there will be a chance of deadlock. The process has to be rejected which can't be provided resources. To overcome with the limitation of Banker's Algorithm we introduced a virtual resource. A virtual resource is software or a physical component between a processes and resources. Virtual resources are a type of resources in which information is stored temporarily such that a virtual memory can be accessed directly without searching in main memory. The main advantage is two processes can execute simultaneously, a process 1 can access virtual resource and at a mean time process 2 can execute through the main resource. The idea behind this is two or more process can execute at a same time and the rejection of process will also decrease at a far extent as well as speed also increases.

## II. METHODOLOGY

All process perform there execution using one of the CPU scheduling algorithm. A CPU scheduling algorithm of different types like FCFS (First Come First Serve), Shortest job Scheduling, Priority Scheduling, Multilevel Scheduling, and Round Robin Scheduling. A process is being executed by following one of the scheduling algorithms. In these scheduling algorithms each process requests for a resource. A resource is allocated to each process. Sometimes two or more resources are also allocated to each process.

In some situations when some another process request for the same resource it can't be available. The result causes deadlock. A deadlock occurs due to unavailability of resources. Situation for deadlock can be no mutual sharing, hold and wait and circular resources. Then come's Banker's algorithms in which we take only those resources which are in safe state. A Banker's Algorithm used to reject that process which is in unsafe condition. To overcome with a limitation of Banker's algorithm we introduce "Virtual Resources". A virtual resource is a physical or a software component between process and resources. It acts as a mediator. A virtual resource is identical for each process. Every process will be allocated different virtual resources according to its need and demand.

The methodology behind this is for the very first time when process request for resource it firstly request to the virtual resource. If virtual resource didn't send any acknowledgment for a particular interval of time then it send request to the main resource. If information is present then main resource send an acknowledgement to the process and information is fetched from the main resources. Meanwhile a virtual ID (VID) is generated from the main resource and store at a virtual resource. For the next time when process request the same resource again then virtual



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resource send the acknowledgment to the process and information fetch from the virtual resource only instead of main resource. Here there is a use of virtual ID. The information is fetched through the virtual ID, it acts as a primary key. In the meantime a main resource can be utilized by any other process. This is the main advantage of this technique.

### III. ALGORITHM

Let us suppose P, R, VR as process, resource and virtual resource respectively. i is taken for looping.

1. Loop from  $i=0$  to information

- If  $(VR[i]==\text{information})$  then

Acknowledgement send from virtual resource and information is fetched

Increment of i

- Else if  $(R[i]==\text{information})$

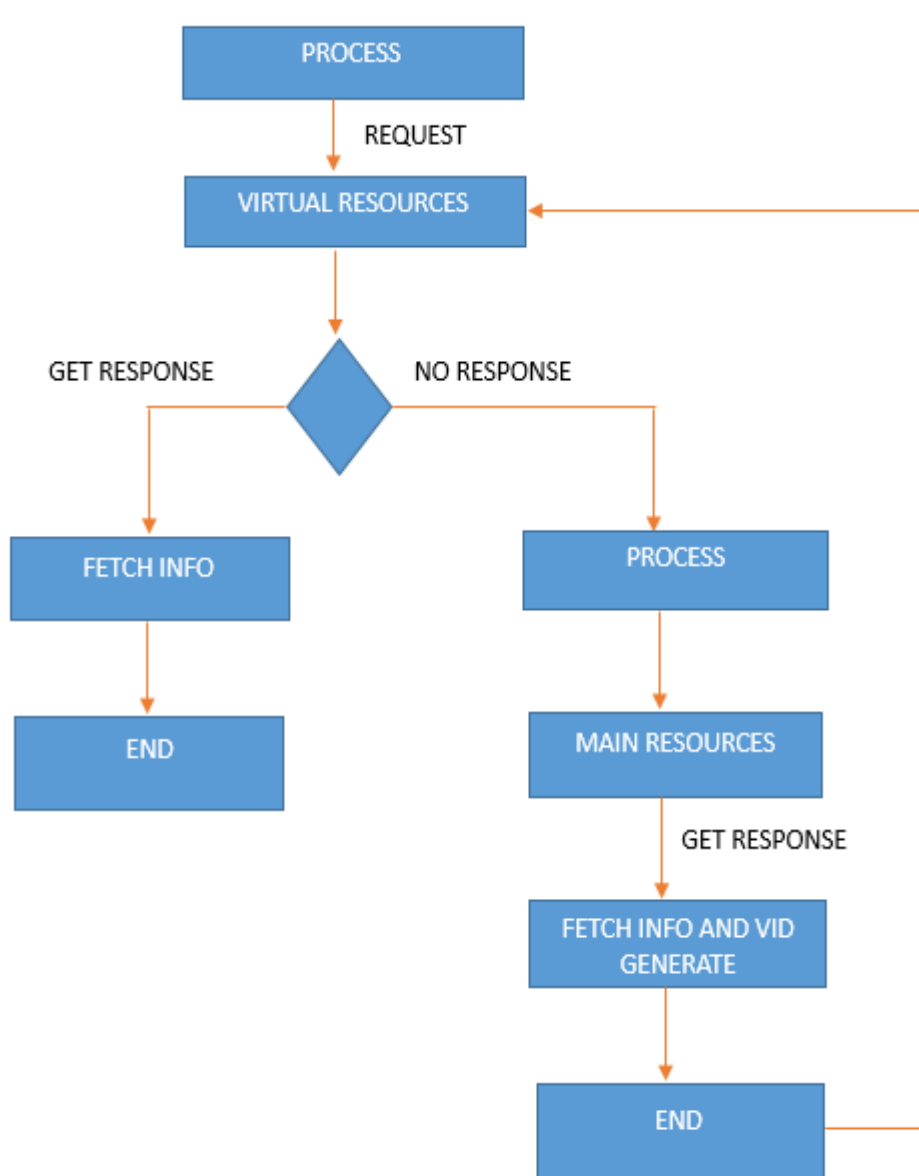
Acknowledgement sends from main resource

VID is generated and stored in virtual resource

Increment of i

- Else return

### IV. FLOW CHART





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V. PHYSICAL DIAGRAM

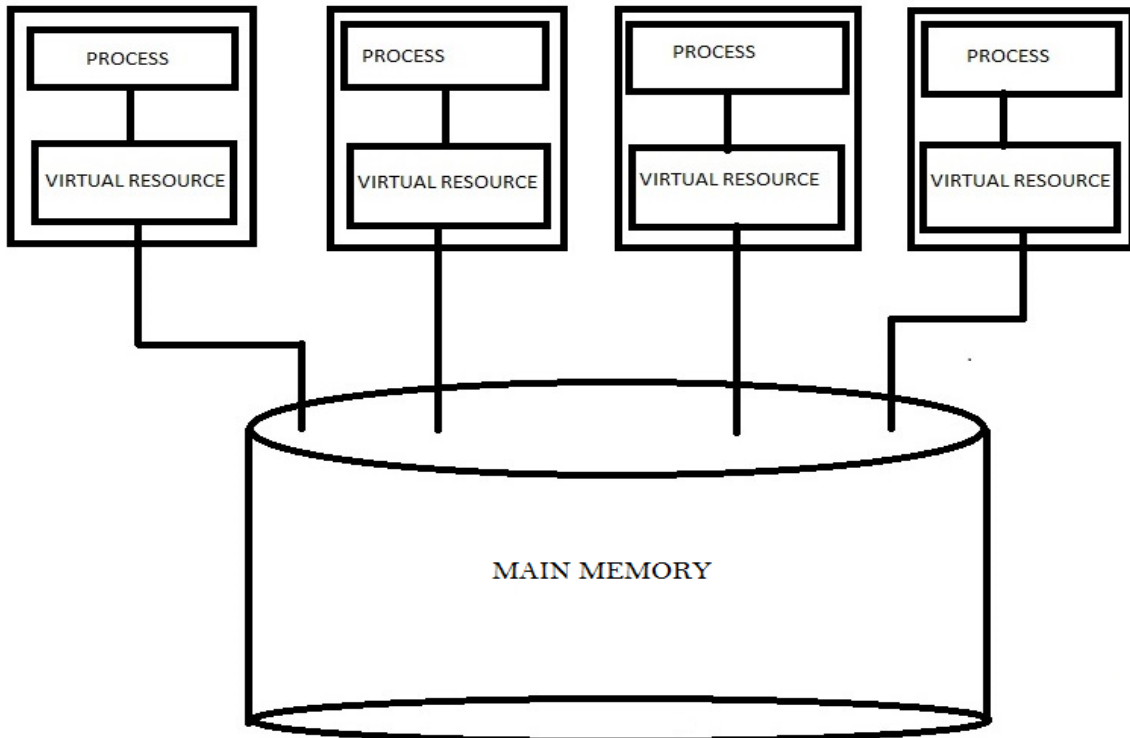


fig 1.1

VI. CONCLUSION

Thus this paper has a concept of virtual resource, which helps to solve the limitations of Banker's Algorithm at a far extent. Here virtual resource is act as a mediator which try to increment the speed and efficiency. The main key of virtual resource is virtual ID (VID) which is a unique ID and generated at the first time when information is fetched from the main resource. Due to virtual resource the processor will increase its processing at 25% - 30% of it. The future scope can be used through CPU scheduling which increase its efficiency more. Thus a new innovation is presented before the world.

AUTHOR BIOGRAPHY



SARUCHI KUKKAR

Designation:- Assistant Professor, Lovely Professional University

Education Details: - BTech – Mtech in Information Technology

Publications:- 4 International publications.



AMITESH KUMAR SHARMA

Designation:- Student

Education Details:- Pursuing MCA , Lovely professional university



SHILPA ADDY

Designation:- Student

Education Details:- Pursuing MCA , Lovely professional university