

A  
SYNOPSIS  
ON

**“Studies on implementation and enhancement of computational speed of computer using new Binary Number System”**

**Submitted for the Award of the Ph. D. degree of**

**PACIFIC ACADEMY OF HIGHER EDUCATION AND  
RESEARCH UNIVERSITY**

**BY**

**Under the Supervision of**



**PACIFIC ACADEMY OF HIGHER EDUCATION AND RESEARCH UNIVERSITY  
Udaipur (Raj.)  
2011**

## **OUTLINE OF PROPOSED RESEARCH WORK:**

**1. Name of Scholar: (In English):**

(In Hindi) \_\_\_\_\_

**2. Title of the Research:** “Studies on implementation and enhancement of computational speed of computer using New Binary Number System”

**3. Location:**

**a) Organization/Department where the work is to be done:**

**b) Geographical Area of Investigation, if any:**

**4. Importance/Rationale of proposed Investigation:** The importance proposed work is enhancement of speed of computer and any answering system for high speed data transmission.

**5. Scope of the proposed study:** The scope of proposed work is change the architecture of peripherals of computer system.

**6. Review of work already done on the subject:** The computer system process signals in form of conventional binary number system means 0 and 1.

**7. Research gaps identified in the proposed field of investigation:** When we will using new binary number system definitely, hardware of circuits will reduced then all over speed of system should enhance. And same time our system software is synchronized.

**8. Objectives of the proposed study:** Objective of the proposed work is two states are representation by 0 and 1 in computer system. In new binary system logic is replaced by logic -1 and +1 remains as it is. 0 indicates false or low and 1 indicates true or high. Here have made an attempt to study various arithmetic operation, digital signal processing and round robin scheduling of CPU.

**9. Research methodology:** The proposed research work will be divided into several phases as follows:

**Hypotheses to be tested:** Simulation Using MATLAB tools. And testing in laboratories.

**Sources of Information:** Different International and national Journals and conferences.

**Tools and Techniques of Research:** Simulation Using MATLAB tools. Building software frame comprising of the digital processors with different orientations. The Round Robin Scheduling algorithm is designed especially for time sharing system. Time-sharing is sharing a computing resource among many users by means of multiprogramming and multi-tasking.

Introduction and objective of Synopsis:

## **“Studies on implementation and enhancement of computational speed of computer “using new number system”**

Computer Science is fast growing field of research. Theoretical as well as experimental research in computer science has been done by various scientists and Engineers. Basically, computer is two-state device (1). Two states are representation by 0 and 1. Aims and objective of research is to schedule the processes in efficient and convenient way, in new binary system logic is replaced by logic -1 and +1 remains as it is. 0 indicates false or low and 1 indicates true or high (3). Here have made an attempt to study various arithmetic operation, digital signal processing and round robin scheduling of CPU (2).

The processes are scheduled according to the given burst time, arrival time and priority. The execution of processes used number of resources such as memory ;( 6) CPU etc. scheduling decision refers to the concept of selecting the next process for execution. During each scheduling decision, a context switch occurs, meaning that the current process will stop its execution and put back to the ready queue and another process will be dispatched. We define the scheduling overhead cost when more context switches and overall when all process are switching the more context switches are occur and finally CPU performance will be decreased.

An operating system interacts between the user and the computer hardware. The purpose of an operating system is to provide a platform in which a user can execute programs a well-located and efficient manner (7). Modern operating systems are more complex, they have evolved from a single task to a multitasking environment in which processes run in a synchronized manner. CPU scheduling is a necessary operating system task; therefore its scheduling is central to operating system design. When there is more than one process in the ready queue or job pool waiting its turn to be assigned to the CPU, the operating system must decide through the scheduler the order of execution. Allocating CPU to a process requires careful awareness to assure justice and avoid process starvation for CPU (8). Scheduling decision try to reduce the following: turnaround time, response time and average waiting time for processes and the number of context switches. So the main objective of research work to reduce the load of CPU work, increase the performance of CPU, reduces the overhead and schedule the task in efficient.

**PROPOSED OUTCOME:** The new binary number system is based on +1 and -1 levels instead of 1 and 0. The representation is very useful in digital signal processing where signal magnitude

quantities are generally employed. Application of this system is like arithmetic operation (Generation of new binary number, addition subtraction multiplication etc), analog to digital conversion, data transmission, data encoding and decoding, the performance of our proposed algorithm, we have taken a set of processes in different cases. Here for simplicity, we have taken 5 processes. The algorithm works effectively even if it used with a very large number of processes. In each case, we have compared the experimental results of our proposed algorithm with the round robin scheduling algorithm with fixed time quantum Q. synchronization between computer hardware and system software. So we are expecting our proposed system compute data, competitively enhance then conventional binary number system.

#### **TIME FRAME:**

00-06 Months : Literature survey, planning and consultation of experts.

06-09 Months : Skill acquisition with respect to tool.

09-15 Months : Simulating with the designed parameters for systems.

15-21 Months : Testing and comparing with the system in Real time.

21-24 Months : Writing documentation.

#### **10. Bibliography:**

1. K.Z Pekmestzi, "New number representation for digital signal processing" INT. J.Elctronics, 66(1989)709-723
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7. "Yaashuwanth .C & R. Ramesh" Intelligent time slice for round robin in real time operating system, IJRRAS 2 (2), February 2010.
8. "Silberschatz, A., P.B. Galvin and G. Gagne, 2004" Operating Systems Concepts. 7th Edn., John Wiley and Sons, USA., ISBN: 13: 978-0471694663, pp: 944.

**Signature of the Candidate with Date**

**Outline Approved**

**Name & signature of supervisor with date**

