



**Tribhuvan University
Institute of Science and Technology**

**A Comparative Study on Variants of dynamic RR Scheduling
Algorithms for Multiprogramming System**

Dissertation

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Master of Science in
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By

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(31 January, 2016)

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**Tribhuvan University
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Date: - 31 January, 2016

Recommendation

I hereby recommend that this dissertation prepared under my supervision by **Mr. Ganesh Bahadur Dhami** entitled “**A Comparative Study on Variants of dynamic RR Scheduling Algorithms for Multiprogramming System**” in partial fulfillment of the requirements for the degree of Master of Science in Computer Science and Information Technology be processed for the evaluation.

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We certify that we have read this dissertation work and in our opinion it is satisfactory on the scope and quality as a dissertation in the partial fulfillment for the requirement of Master of Science in Computer Science and Information Technology.

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Student's Declaration

I hereby declare that I am the only author of this work and that no sources other than the listed here have been used in this work.

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I have done my best to complete this research work but there may be some errors in my dissertation work, so any suggestion regarding the mistake of this work will be always welcomed.

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Abstract

Round Robin scheduling algorithm is used in multitasking computers for executing several programs at the same time in interactive ways. In some multiprogramming systems one of the processes is called the foreground processes and others are called background processes. The foreground processes is the one that accepts input. Background processes cannot accept interactive input from a user but can access data stored on the disk. Background processes generally have a lower priorities than foreground processes so that they do not interfere with interactive applications. Round Robin algorithm also used in load balancing technique in DNS server in data communication system. Many researchers has purposed and developed the varieties of Round Robin algorithms whose key factor is depending on the optimal quantum size. This research study includes the performance evaluation of the different algorithms based on different parameters. This comparative analysis study consists of three variants of dynamic round robin scheduling algorithms namely DRR, Mean based RR and Median based RR. The data for the analysis are randomly generated and analyzed on different scheduling parameters. The analysis result shows Median based RR algorithm has better performance over DRR. Average waiting time and average turnaround time of Median based RR has up to 19.04% and 25.50% less than DRR similarly up to 17.74% and 17.14% less than mean based RR. The optimal quantum corresponds to median based RR.

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LIST OF ABBREVIATIONS

DNS	- Domain Name System
CPU	- Central Processing Unit
I/O	- Input Output
FCFS	- First Come First Serve
RR	- Round Robin
DRR	- Dynamic Round Robin
IDE	- Integrated Development Environment
TQ	- Time Quantum
BT	- Burst Time
RQ	- Ready Queue
CS	- Context Switch
ATAT	- Average Turnaround Time
AWT	- Average Waiting Time