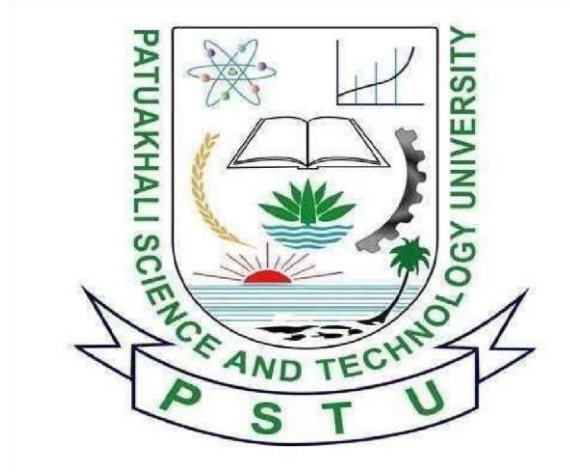# PATUAKHALI SCIENCE AND TECHNOLOGY UNIVERSITY

Course Code : CCE-211

SUBMITTED TO:

Prof. Arpita Hawlader

Department of Computer and Communication Engineering

Faculty of Computer Science and Engineering

SUBMITTED BY:

Shaid Ibna Sobhan

ID: 2102057

Reg No: 10184

Faculty of Computer Science and Engineering

Assignment: Chapter 08

Date of Submission: 14 May,2024

Batcher-Banyan

The Batcher-Banyan switch, also known simply as the Batcher switch or the Banyan switch, is a type of network switch used in computer networking and telecommunica ons.

The Batcher-Banyan switch is par cularly notable for its ability to efficiently route data packets in parallel compu ng systems, such as mul processor systems and parallel computers.

The switch consists of several stages of interconnected switches, typically arranged in a binary tree structure. Each stage of the switch performs a specific rou ng func on to guide packets from input ports to output ports.

Banyan switch
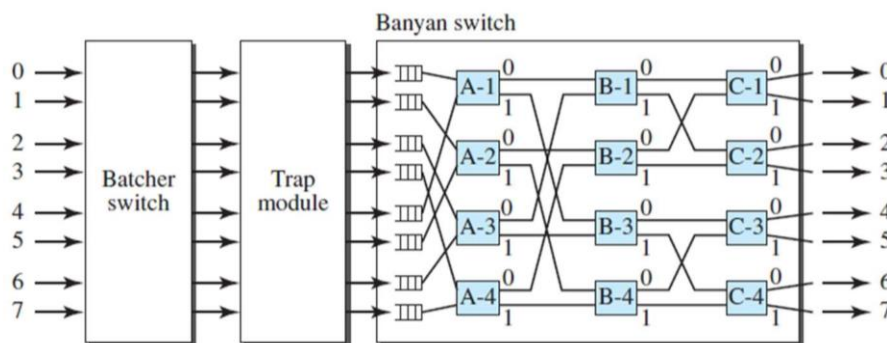
Here's a simplified explana on of how it works:

1. Input Stage: In this stage, each input port is connected to mul ple output ports. The switch examines the des na on address of each incoming packet and decides which output port(s) it should be forwarded to.

2. Middle Stages: These stages perform a series of binary comparisons on the des na on addresses of packets to determine their rou ng paths. Each stage halves the number of possible paths un l the packets reach their designated output ports.

3. Output Stage: This stage routes packets from the last set of intermediate switches to their final output ports.

The Batcher-Banyan switch offers several advantages:

-   Non-blocking: It can route packets from any input port to any output port simultaneously without blocking any other packets.

-   Scalability: It's highly scalable and can be expanded by adding more stages and switches to accommodate a larger number of ports.

-   Fault-tolerant: It can o en withstand failures in individual switches without affec ng the overall performance of the network.