

# 20 Lecture - CS501

## Important Subjective

### 1. What is a pipeline hazard?

A pipeline hazard is a condition that occurs during pipelining where the pipeline execution is stalled due to a conflict or dependency between pipeline stages.

#### **What is a data hazard?**

A data hazard is a type of hazard in pipelining that occurs when a pipeline stage requires data that is produced by a previous pipeline stage that has not yet completed.

#### **What is a structural hazard?**

A structural hazard is a type of hazard in pipelining that occurs when two or more pipeline stages require the same hardware resource, and the resource cannot be used by all of the stages simultaneously.

#### **What is a control hazard?**

A control hazard is a type of hazard in pipelining that occurs when the pipeline needs to make a decision based on a conditional branch instruction that has not yet been resolved.

#### **What is pipeline latency?**

Pipeline latency is the amount of time required to complete a single instruction in a pipelined processor.

#### **What is pipeline throughput?**

Pipeline throughput is the rate at which instructions are completed by a pipelined processor.

#### **How can data hazards be resolved in pipelining?**

Data hazards can be resolved in pipelining by forwarding data between pipeline stages or by inserting pipeline stalls.

#### **How can structural hazards be resolved in pipelining?**

Structural hazards can be resolved in pipelining by adding additional resources or by redesigning the pipeline.

#### **How can control hazards be resolved in pipelining?**

Control hazards can be resolved in pipelining by using branch prediction.

#### **What is dynamic scheduling in pipelining?**

Dynamic scheduling is a technique in pipelining where the hardware dynamically schedules instructions based on their availability, rather than following a fixed sequence of instructions.