

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.