Pipelines

Description –

The four pipelines of the single cycle data path CPU provide monitoring, hazard protection, and performance improvements to the running of programs:

* Monitoring – Storing certain values within the pipeline and transferring it forward to the next level pipelines, the CPU may monitor the instructions as they pass through.
* Hazard Protection – By storing certain pieces of information between cycles it can be used in future cycles before it completely makes its way through the CPU. By doing this there is a large decrease in hazards for the program.
* Performance Improvements – By utilizing the hazard protection explained above there is less of a need for artificial no operations (dummy instructions) to introduce delays for the CPU to catch up.